Operation/Reference Guide

NXD-500i

5" Modero® Wall/Flush Mount Touch Panel with Intercom

Touch Panels

Last Revised: 7/2/2012

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Introduction

The NXD-500i 5" Modero Wall/Flush Mount Touch Panel with Intercom (**FG2261-02**) is a widescreen full-color mini-touch panel with full sound and intercom capability. This panel includes a built-in microphone, speakers, a mini-USB port for programming and audio output, and one NetLinx-programmable button.

The NXD-500i supports Intercom functionality, which allows two communicating panels (controlled by the NetLinx Master) to transmit full-duplex audio signals over a network in order for it to be used as an Intercom system.

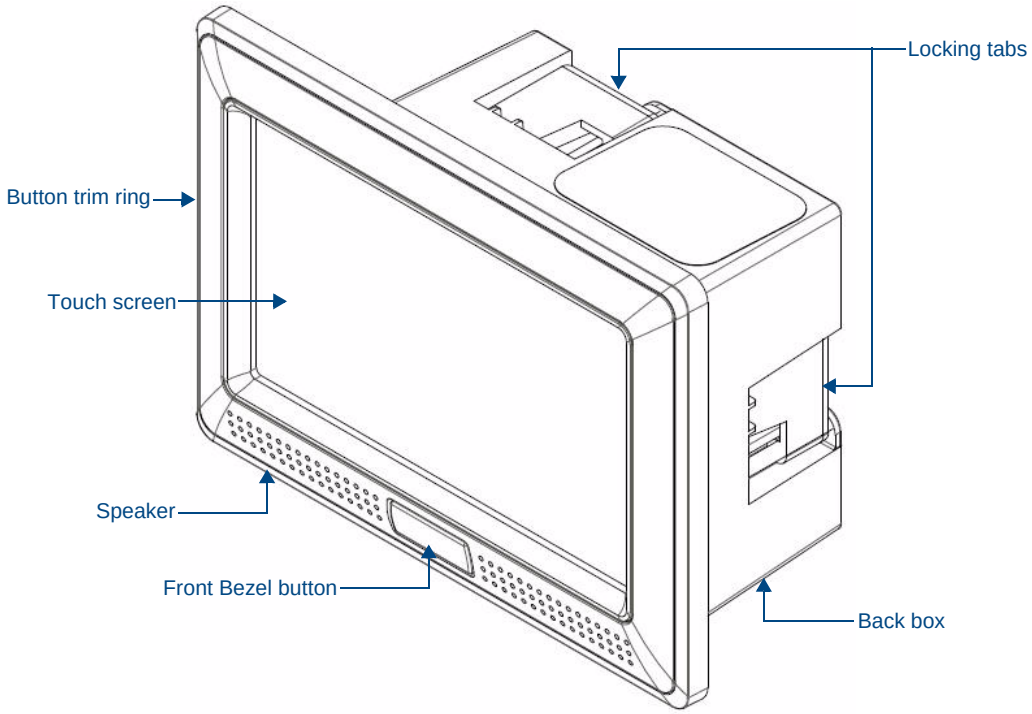

FIG. 1 NXD-500i Wall/Flush Mount Touch Panel - Schematics

Key Features

- Support of AMX's 4th generation (G4) graphics which provide higher brightness, richer colors, and deeper contrast. The new G4 graphics technology is supported by the TPDesign4 Touch Panel Design application, available for download from **www.amx.com**.
- Display of images on a large 16:9 image format, while providing a wide 90-degree top-to-bottom viewing angle.
- A front panel light sensor, motion sensor, IR receiver and a Sleep/Setup Access button.
- Utilization of the *Voice Over Internet* protocol (VoIP), which allows telephone calls to be made or received directly from the touch panel.
- Support of *AMX Computer Control*, which enables remote viewing and control of any networked computer directly from the panel. This gives the user the ability to launch digital music from a PC, cruise the Internet, check and respond to E-mail, open software files, and launch applications. Anything you can do on your PC can be accomplished through these panels.
- Programmable firmware that can be upgraded via the mini-USB port in the back of the device.
- Same perimeter footprint as the NXD-CV5, but with a shallower mounting depth.

NXD-500i Specifications

Product Specifications	
Dimensions (HWD):	• NXD-500i (with faceplate): 4.15" x 5.59" x 1.97" (10.50 cm x 14.20 cm x 5 cm) • CB-TP5i Rough-In/Wallbox (*optional*): 4.27" x 5.14" x 3.40" (10.86 cm x 13.06 cm x 8.64 cm)
Power Requirements:	• PoE Powered - No local Power Supply needed. • Max power draw: 5.5W.
Memory (factory default):	• 128 MB SDRAM • 256 MB integrated Flash Memory (not upgradeable - factory programmed)
Panel LCD Parameters:	• Aspect ratio*:* 16 x 9 • Maximum brightness (luminance): 200 cd/m^2 • Channel transparency: 8-bit Alpha blending • Contrast ratio: 250:1 • Display colors: 256 thousand colors (18-bit color depth) • Dot/pixel pitch: 0.14 mm • Panel type: TFT Color Active-Matrix • Screen resolution: 800 x 480 pixels (HV) @ 60 Hz frame frequency • Viewing dimensions: 4.3" x 2.58" (109.2 mm x 65.2 mm)
Active Viewing Area:	• 4.25” x 2.55” (10.80cm x 6.48cm)
Viewing Angles:	• Up/Down/Left/Right: 85/85/85/85
IR Reception Angle:	• Horizontal: ± 25° (left and right from center) • Vertical: ± 15° (up and down from center)
Audio	• G.711 sound standard • 75dB SPL@1m
Supported Audio Sample Rates:	• 48000Hz, 44100Hz, 32000Hz, 24000Hz, 22050Hz, 16000Hz, 12000Hz, 11025Hz, and 8000Hz.
Intercom:	• Full duplex VoIP capabilities.
Front Panel Components:	
• Light sensor:	Motion-sensitive light detector for automatic adjustment of the panel brightness (a dim room results in a dimmer LCD display, and a bright room results in a brighter LCD display). ***Note**: The light sensor can be adjusted via the Sensor Setup page (page 61).*
• Motion sensor (PIR):	• Proximity Infrared Detector to wake the panel when the panel is approached. • Activation range: ± 25° (left and right from center) and ± 15° (up and down from center). ***Note**: This sensor can be adjusted via the Sensor Setup page (see page 61).*
• Front Bezel button:	Provides both access to the *Setup* and *Calibration* page and toggles the panel between a "sleep" or "wake" state. "Sleep" status means the backlight is Off.
• Microphone:	Frequency response of 300 to 3400Hz Used for intercom applications
• Speaker:	• Output of 4Ohm • 2 Watts • 300Hz cutoff frequency

Product Specifications (Cont.)	
Side Panel Components:	
• Ethernet 10/100 port:	• RJ-45 port for 10/100 Mbps communication. The Ethernet port automatically negotiates the connection speed (10 Mbps or 100 Mbps), and whether to use half duplex or full duplex mode. Power is supplied through Power Over Ethernet (PoE) • NXD-500i panels communicate with the NetLinx Master using the ICSP protocol over Ethernet. • LEDs show communication activity, connections, speeds, and mode information: *L/A-link/activity* - yellow LED lights On when the Ethernet cables are connected and terminated correctly and then blinks when receiving Ethernet data packets. *SPD-speed* - Green LED lights On when the connection speed is 100 Mbps and turns Off when the speed is 10 Mbps.
• Mini-USB connector:	5-pin Mini-USB connector used for programming, firmware update, and touch panel file transfer between the PC and the target panel. The connector is also used for providing audio output for external speakers. The mini-USB port automatically detects the presence of a headphone adaptor, allowing the port to be used for headphone connectivity. ***Note**: When connecting the panel to PC using a CC-USB (or compatible) cable, be sure to power the panel On before attempting to connect the USB cable from the PC to the mini-USB port on the panel. Refer to the Configuring and Using USB with a Virtual Master* section on page 25 *for more information.*
Button Assignments:	Button assignments can only be adjusted in TPD4 and not on the panel. • Button channel range: 1 - 4000 button push and feedback (per address port) • Button variable text range: 1 - 4000 (per address port) • Button states range: 1 - 256 (General Button; 1 = Off State, 2 = On State) • Level range: 1 - 600 (default level value 0-255, can be set up to 1-65535) • Address port range: 1 - 100
Weight:	• 0.80 lbs (0.36 kg)
Certifications:	• FCC Part 15 Class B • CE • IEC 60950 • RoHS
Operating / Storage Environment:	• Operating Temperature: 0° C (32° F) to 40° C (104° F) • Operating Humidity: 5% - 85% relative humidity (non-condensing) • Storage Temperature: -20° C (-4° F) to 60° C (140° F) • Storage Humidity: 5% - 85% RH
Included Accessories:	• NXD-500i Installation Guide (**93-2261-02**) • Front Bezel (**60-2261-11**)
Other AMX Equipment:	• NXA-BEZ500 Mystique Style Bezel Kit (**FG2261-48**) • NXA-BEZP-500 Portrait Bezel Kit (**FG2261-10/11**) • CB-TP5i Rough-In/Wallbox (**FG038-11**) • CB-TP5ib Back Cover for CB-TP5i Rough-In/Wallbox (**FG038-12**) • NXA-TTS500 Table Top Stand (**FG2261-40**) • PS-POE-AF PoE Injector (**FG423-80**) • CC-USB Type-A to Mini-B 5-wire programming cable (**FG10-5965**) • USB to Headphone Adaptor (**FG5966-23**) • NXA-RK5 Rack Mount Kit for 5" Wall Mount panels (**FG2904-55**): - 5" Rackmount - Four Screws, #10-32 x.625, PH Truss, BLK - Four Washers, #10, Black Nylon - Three Screws, #4-40 x.250, PPH, BLK

Front Bezel Button

The NXD-500i has only one button on the front of the device, in the center of the button trim ring. This button has several uses:

- Press the button once to start a previously programmed function, or to turn off the display if not previously programmed.
- Press and hold the button for 6 seconds to put the device into *Setup Mode* (please see the *Setup Page* section on page 47 for more information).
- Press and hold the button for 9 seconds to enter *Calibration Mode* (please see the *Panel Calibration* section on page 21 for more information).
- Press and hold the button for 20 seconds to reboot the panel.

Side Panel Connectors

FIG. 2 shows the connectors located on the NXD-500i Modero panel.

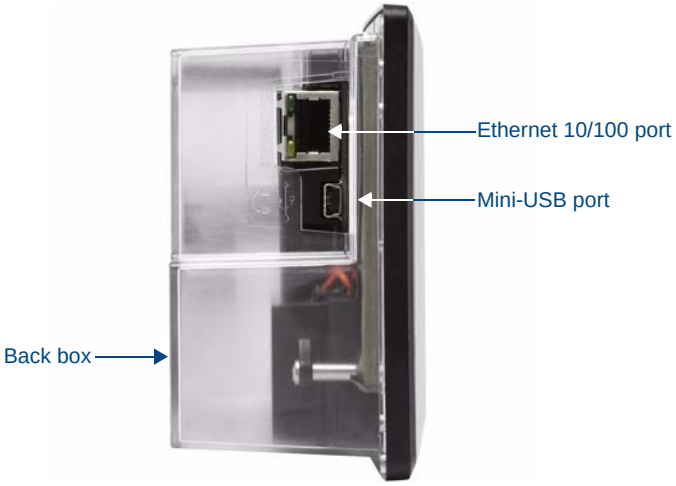

FIG. 2 NXD-500i Wall/Flush Mount Touch Panel - side panel connectors

Ethernet Port

The NXD-500i has no power input port. Instead, all power is supplied via the Power over Ethernet (PoE) protocol. With PoE, the power is supplied directly through the Ethernet port through the PS-POE-AF PoE Injector, available from AMX.

For more information on the PS-POE-AF POE Injector, please refer to the *NXD-500i Touch Panel Accessories* section on page 17.

Mini-USB Port

The mini-USB port is used solely for software upload and audio output. The mini-USB port automatically detects the presence of a headphone adaptor, allowing the port to be used for headphone connectivity.

For more information on software upgrading, please refer to the *Upgrading the Firmware via the USB port* section on page 41.

Installation

Overview

While the NXD-500i is designed to fit into pre-existing NXD-CV5 touch panel sites, the actual installation differs from that of the NXD-CV5 is several significant ways.

The NXD-500i can be installed either directly into the (optional) CB-TP5i Rough-In Box or another solid surface environment, using either solid surface screws or the included locking tabs for different mounting options.

The NXD-500i is contained within a clear outer housing known as the backbox (FIG. 3). This back box is removed when installing the device into a wall or into a Rough-In Box.

Because of the back box, the device may be installed into either a pre-wall surface using a CB-TP5i conduit/ wallbox, or into a solid surface using the included locking tabs or either solid surface or drywall screws.

FIG. 3 NXD-500i - side view

NOTE

Make sure to remove the protective plastic cover from the LCD. If the cover is not removed, the panel may not respond properly to touch points on the LCD or allow proper screen calibration.

Installing the Trim Ring

The outer Trim Ring is secured to the Faceplate with plastic latches. The Trim Ring must first be removed to install the touch panel, and is later re-secured when installation is complete.

To install the Trim Ring:

1. Place the Button Trim Ring, latch side down, atop the Faceplate.
2. Firmly press down around the Button Trim Ring until all of the latches are securely inserted into their openings on the Faceplate, and the Button Trim Ring is securely fastened. Verify that the Button Trim Ring is firmly inserted onto the Faceplate and that no gaps remain between this Trim Ring and the outer surface of the Faceplate.
3. Place the Faceplate back onto the device. Make sure to align the Microphone, Light, and PIR Motion sensor locations on the main unit to their respective openings on the Faceplate assembly.

Removing the Faceplate

In certain circumstances, the Faceplate must be removed and replaced with a new faceplate. Because the device is installed against a wall, the faceplate must be removed carefully to prevent the two top prongs on the underside of the Faceplate from being broken.

To remove the faceplate:

1. Gently lift up on the faceplate from the bottom. Do NOT pull up from the sides or the top.
2. Let the faceplate fall forward from the top of the device and let it pivot from the bottom.
3. Remove the faceplate from the two bottom prongs and install the new trim ring if necessary.
4. Place the Faceplate back onto the device. Make sure to align the Microphone, Light, and PIR Motion sensor locations on the device to their respective openings on the Faceplate assembly.

Installing the NXD-500i Touch Panel

The NXD-500i can be installed either directly into the (optional) CB-TP5i Rough-In Box or other solid surface environment, using solid surface screws or the included locking tabs as mounting options.

The following sections describe mounting the touch panel directly into a pre-wall rough-in box, a solid surface, drywall, or an NXA-RK5 Rack Mount Kit.

Pre-Wall Installation of the Rough-In Box

The CB-TP5i Rough-In Box (**FG038-11**) is an optional metallic box that is secured onto a stud/beam in a **pre-wall** setting, where no walls are present.

Installation procedures and configurations can vary, depending on the installation environment. This section describes the installation procedures for the most common installation scenarios.

WARNING

In order to guarantee a stable installation of the NXD-500i, the distance between the CB-TP5i and the outer wall surface must be a minimum of .50 inches (1.27cm) and a maximum of .875 inches (2.22cm).

NOTE

Cutting out the surface slightly smaller than what is outlined in the installation drawings, to allow any necessary cutout adjustments, is highly recommended.

1. Attach the optional Back Cover for the CB-TP5i (**FG038-12**) if necessary.
2. Fasten the CB-TP5i Rough-In Box to the stud through the holes on the Stud Mounting tabs (FIG. 4), using either nails or screws.

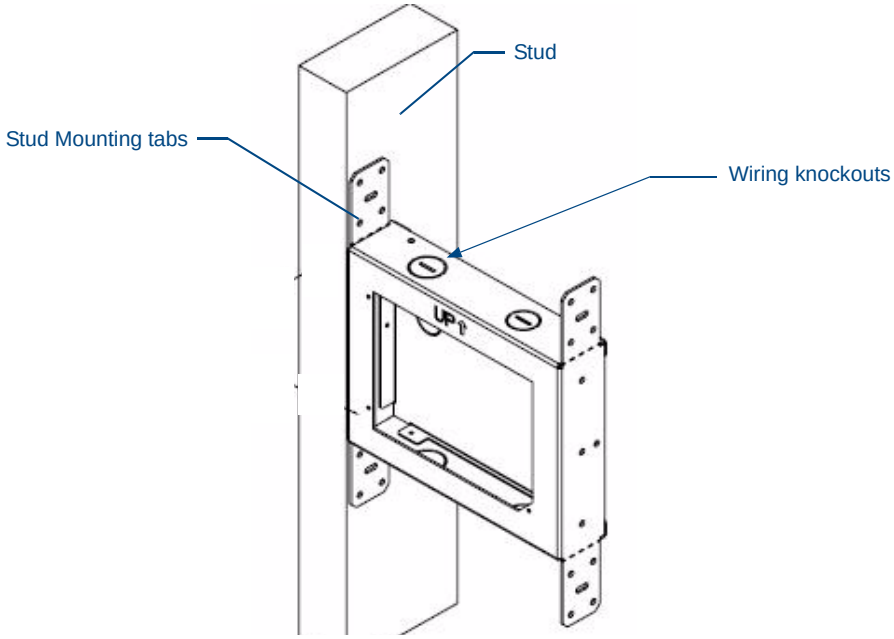

FIG. 4 CB-TP5i Rough-In Box components

3. Remove the appropriate wiring knockouts from the rough-in box (FIG. 4) to accommodate the cables being threaded through to the NXD-500i touch panel.
4. Thread the incoming Ethernet and USB wiring through the knockouts. Use of the left wiring knockouts are recommended with this installation. Leave enough slack in the wiring to accommodate any re-positioning of the panel.
5. Install the drywall/sheetrock before inserting the main NXD-500i device into the CB-TP5i.

Installing the NXD-500i within a Rough-In Box

The Rough-In Box must be mounted prior to continuing this section. Refer to the procedures in the *Pre-Wall Installation of the Rough-In Box* section on page 7 for detailed pre-wall installation instructions. *Verify that all necessary cables have been threaded through the knockouts on the left of the Rough-In Box and the connections have been tested prior to installation of the NXD-500i.*

1. Remove the Faceplate bezel (**A** in FIG. 5) from the main NXD-500i unit (**B** in FIG. 5) by gripping the faceplate from the top and lifting up and then pulling with gentle outward force.

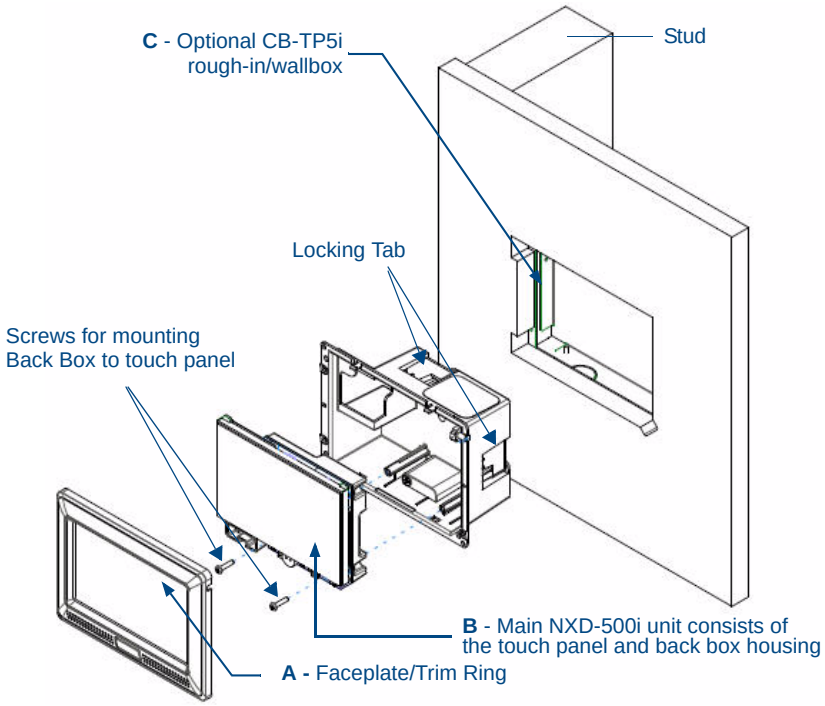
C - Optional CB-TP5i rough-in/wallbox
Stud
Locking Tab
Screws for mounting Back Box to touch panel
B - Main NXD-500i unit consists of the touch panel and back box housing
A - Faceplate/Trim Ring

FIG. 5 NXD-500i panel installation into a CB-TP5i (pre-wall construction)

NOTE

Be sure to pull the faceplate UP before pulling it out and away from the rest of the device. Pulling straight outward may lead to damage to the faceplate, including breaking off the tabs that attach the faceplate to the device.

2. Gently unscrew the two screws attaching the NXD-500i to its back box. These are at the bottom of the device, underneath the touch screen. Carefully remove the NXD-500i from the back box.

NOTE

While the screws are loosened, you can adjust the LCD to ensure it is parallel to the sides of the backbox, if necessary. While adjusting the LCD is possible, it is not required in most cases.

3. Thread the incoming Ethernet and USB wiring from their terminal locations through the surface opening. Leave enough slack in the wiring to accommodate any re-positioning of the panel.
4. Push the back box into the wall opening. Insure that the locking tabs lie flush against the back box.
5. Extend the locking tabs on the sides of the back box by tightening the screws inside the box. Not all of the tabs must be extended to lock the back box in place, but extending a minimum of the top and bottom tabs is highly recommended. Apply enough pressure to the screw head to keep the box flush with the wall: this ensures that the locking tabs will tighten up against the inside of the wall.
   The back box is clear to allow visual confirmation that the tabs have been extended and are gripping the wall. This also allows visual confirmation if the entire assembly has to be removed from the wall for any reason.

WARNING

The maximum recommended torque to screw in the locking tabs on the back box is 5 IN-LB [56 N-CM]. Applying excessive torque while tightening the locking tab screws, such as with powered screwdrivers, can strip out the tabs or damage the back box.

6. Connect both connectors to their corresponding locations along the left side of the NXD-500i touch panel.
7. Test the incoming wiring by attaching the panel connections to their terminal locations and applying power via the PoE Injector. Verify that the panel is receiving power and functioning properly to prevent repetition of the installation.Test the incoming wiring by connecting the panel connections to their terminal locations and applying power via the PoE Injector. Verify that the panel is receiving power and functioning properly to prevent repetition of the installation.

NOTE

Do not disconnect the connectors from the touch panel. The unit must be installed with the attached connectors before being inserted into the Rough-In Box.

8. Install the NXD-500i into the back box.
9. The microphone cable is taped to the back box. Connect the microphone cable to its connector, making sure that the cable does not interfere with reattachment of the Faceplate.
10. Install the two Plastite screws attaching the NXD-500i to the back box (FIG. 5).
11. Place the Faceplate/Trim Ring assembly (**A** in FIG. 5) back onto the main NXD-500i unit (**B** in FIG. 5). *Make sure to align the Microphone, Light, and PIR Motion sensor locations to their respective openings on the front faceplate/bezel.*
12. Reconnect the terminal Ethernet and USB to their respective locations on the Ethernet port and NetLinx Master.

Installing the NXD-500i Into Drywall

The NXD-500i comes with a clear plastic backbox (FIG. 6) designed to attach the panel to standard drywall. This backbox has a locking tab on three of the four faces (missing only on the face containing the space for the connections) to help lock the backbox to the wall.

These locking tabs are only extended AFTER the backbox is inserted into the wall.

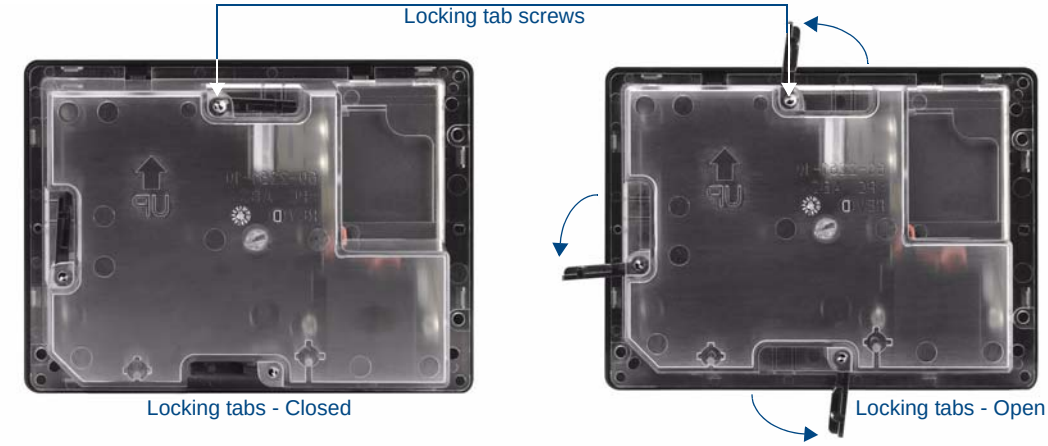

FIG. 6 NXD-500i backbox with closed and open locking tabs

WARNING

When installing the backbox, make absolutely sure that the assembly is in the correct position and in the correct place.
Once the locking tabs are extended and locked into place, removing the backbox will be very difficult without having access to the back of the wall itself or damaging the wall.

- Refer to the diagram for detailed installation dimensions as shown in FIG. 7.
- Cutting out the surface slightly smaller than what is outlined in the installation drawings, in order to make any necessary cutout adjustments, is highly recommended.

1. Prepare the area by removing any screws or nails from the drywall before beginning the cutout process.
2. Cut out the surface for the back box. Refer to the dimensions in FIG. 7 for more information.

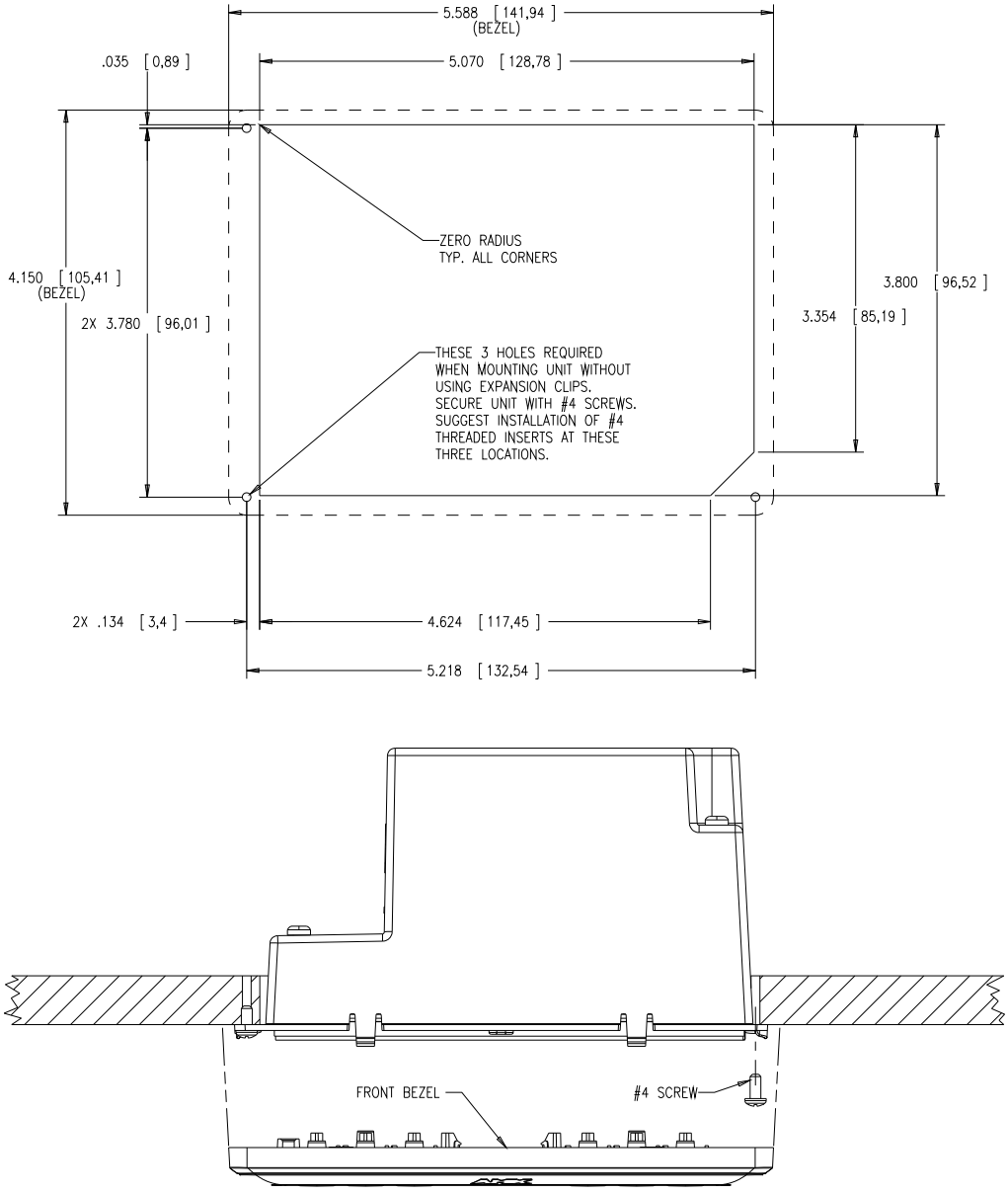
5.588 [141,94] (BEZEL)
.035 [0,89]
5.070 [128,78]
ZERO RADIUS TYP. ALL CORNERS
4.150 [105,41] (BEZEL)
2X 3.780 [96,01]
3.800 [96,52]
3.354 [85,19]
THESE 3 HOLES REQUIRED WHEN MOUNTING UNIT WITHOUT USING EXPANSION CLIPS. SECURE UNIT WITH #4 SCREWS. SUGGEST INSTALLATION OF #4 THREADED INSERTS AT THESE THREE LOCATIONS.
2X .134 [3,4]
4.624 [117,45]
5.218 [132,54]
FRONT BEZEL
#4 SCREW

FIG. 7 NXD-500i Wall Mount panel dimensions

CAUTION

Making sure that the actual cutout opening be slightly smaller than the provided dimensions is highly recommended. This action provides the installer with a margin for error if the opening needs to be expanded. Too little drywall removed is always better than too much.

3. Remove the Faceplate/bezel (**A** in FIG. 8) from the main NXD-500i device (**B** in FIG. 8) by gripping the faceplate and pulling up and then out with gentle outward force.

4. Thread the incoming Ethernet and USB wiring from their terminal locations through the surface opening. Leave enough slack in the wiring to accommodate any re-positioning of the panel.
5. Connect both connectors to their corresponding locations along the left side of the NXD-500i touch panel.

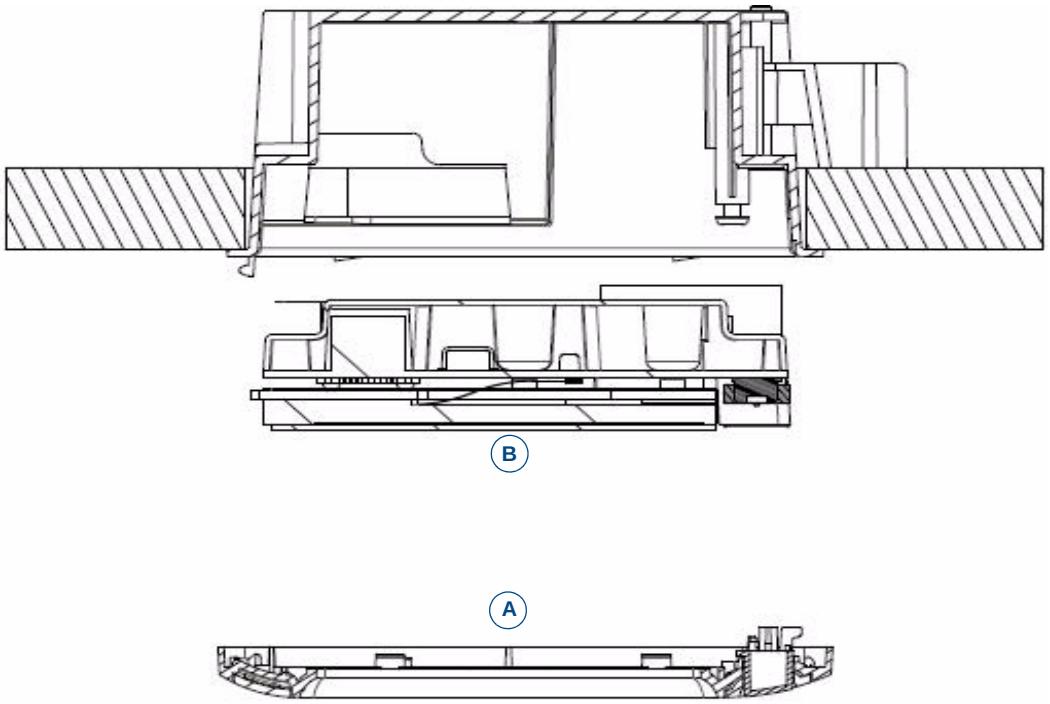

FIG. 8 Wall Mount panel (NXD-500i) installation view for drywall surfaces - top view

6. Test the incoming wiring by attaching the panel connections to their terminal locations and applying power via the PoE Injector.
   Verify that the panel is receiving power and functioning properly to prevent repetition of the installation.

NOTE

Do not disconnect the connectors from the touch panel. The unit must be installed with the attached connectors before being inserted into the drywall.

7. Push the back box into the wall opening. Insure that the locking tabs lie flush against the back box.
8. Extend the locking tabs on the sides of the back box by tightening the screws inside the box.
   - Not all of the tabs must be extended to lock the back box in place, but extending a minimum of the top and bottom tabs is highly recommended.
   - Apply enough pressure to the screw head to keep the box flush with the wall: this ensures that the locking tabs will tighten up against the inside of the wall.
   - The back box is clear to allow visual confirmation that the tabs have been extended and are gripping the wall. This also allows visual confirmation if the entire assembly has to be removed from the wall for any reason.

WARNING

The maximum recommended torque to screw in the locking tabs on the back box is 5 IN-LB [56 N-CM]. Applying excessive torque while tightening the locking tab screws, such as with powered screwdrivers, can strip out the tabs or damage the back box. Use either a manual screwdriver or a variable torque motorized screwdriver at its lowest setting, and stop as soon as the panel is snugly secured.

9. Install the NXD-500i into the back box.

10. The microphone cable is taped to the back box. Connect the microphone cable to its connector, making sure that the cable does not interfere with reattachment of the Faceplate.
11. Install the two Plastite screws attaching the NXD-500i to the back box (FIG. 5).
12. Place the Faceplate/Trim Ring assembly (**A** in FIG. 8) back onto the main NXD-500i unit (**B** in FIG. 8).

NOTE

Make sure to align the Microphone, Light, and PIR Motion sensor locations to their respective openings on the front faceplate/bezel.

13. Reconnect the terminal Ethernet and USB to their respective locations on the Ethernet port and NetLinx Master.

Installing the NXD-500i into a Flat Surface using #4 screws

Three #4 mounting screws (not included) are secured through circular holes located at the left and right sides of the NXD-500i.

NOTE

The most important thing to remember when mounting the NXD-500i is that the back box must be installed flush against the mounting surface.

- Refer to **SP-2261-02** for detailed installation dimensions (reproduced in FIG. 9).
- Cutting out the surface slightly smaller than what is outlined in the installation drawings in order to make any necessary cutout adjustments, is highly recommended.

1. Prepare the area by removing any screws or nails from the surface before beginning the cutout process.
2. Cut out the surface for the NXD-500i Wall Mount unit using the dimensions shown in FIG. 9.

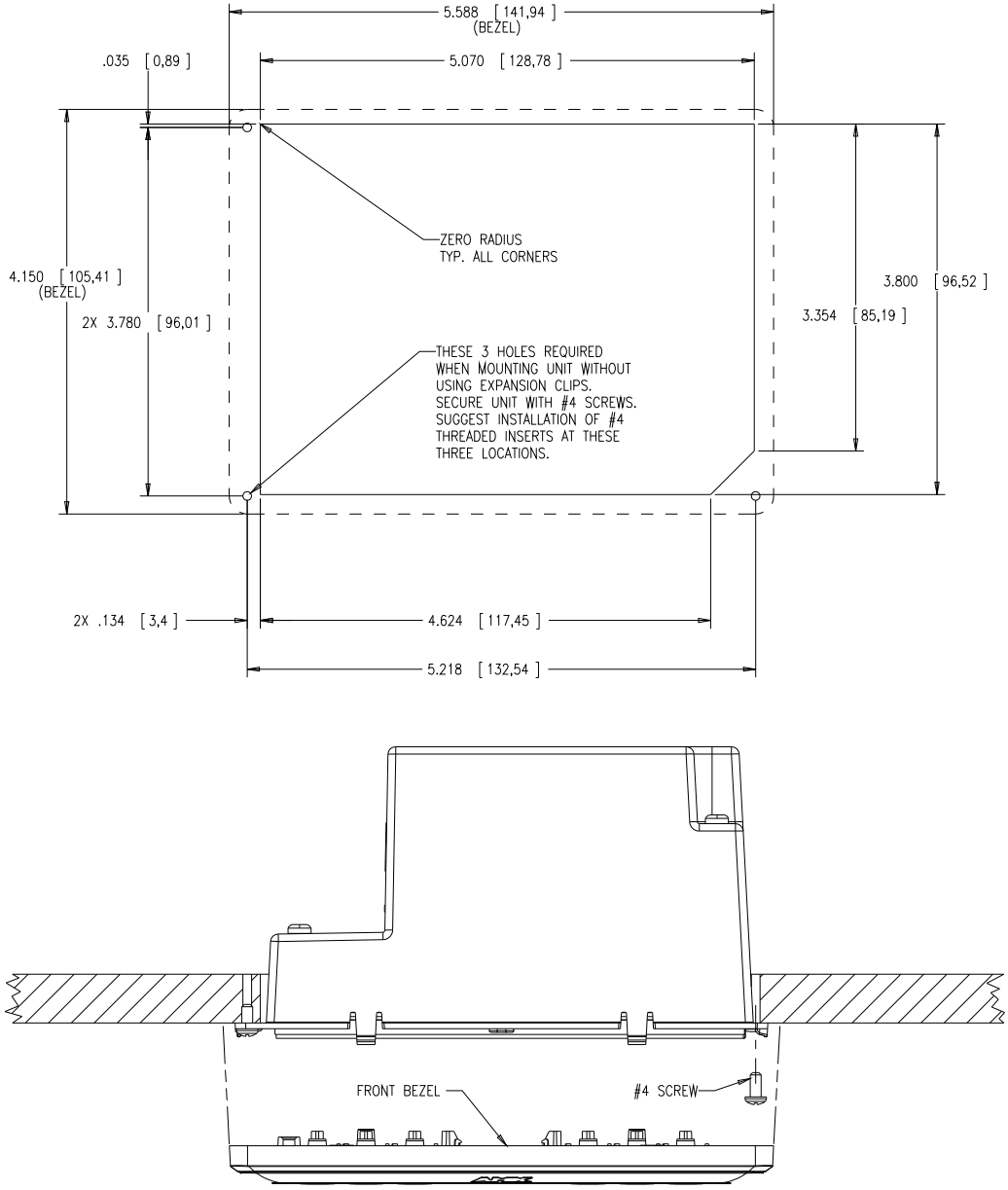
5.588 [141,94] (BEZEL)
.035 [0,89]
5.070 [128,78]
ZERO RADIUS TYP. ALL CORNERS
4.150 [105,41] (BEZEL)
2X 3.780 [96,01]
3.800 [96,52]
3.354 [85,19]
THESE 3 HOLES REQUIRED WHEN MOUNTING UNIT WITHOUT USING EXPANSION CLIPS. SECURE UNIT WITH #4 SCREWS. SUGGEST INSTALLATION OF #4 THREADED INSERTS AT THESE THREE LOCATIONS.
2X .134 [3,4]
4.624 [117,45]
5.218 [132,54]
FRONT BEZEL
#4 SCREW

FIG. 9 NXD-500i Wall Mount panel dimensions using #4 mounting screws

3. Remove the Faceplate/bezel (**A** in FIG. 10) from the main NXD-500i unit (**B** in FIG. 10) by gripping the faceplate and pulling up and out with gentle force.
4. Thread the incoming Ethernet and USB wiring from their terminal sources through the surface opening. Leave enough slack in the wiring to accommodate any re-positioning of the panel.
5. Connect all connectors to their corresponding locations along the left side of the un-powered NXD-500i touch panel.
   - The USB connectors can be from either a USB extension cable or a wireless USB RF transmitter.
6. Test the incoming wiring by connecting the panel connections to their terminal locations. Verify that the panel is receiving power and functioning properly before finalizing the installation.

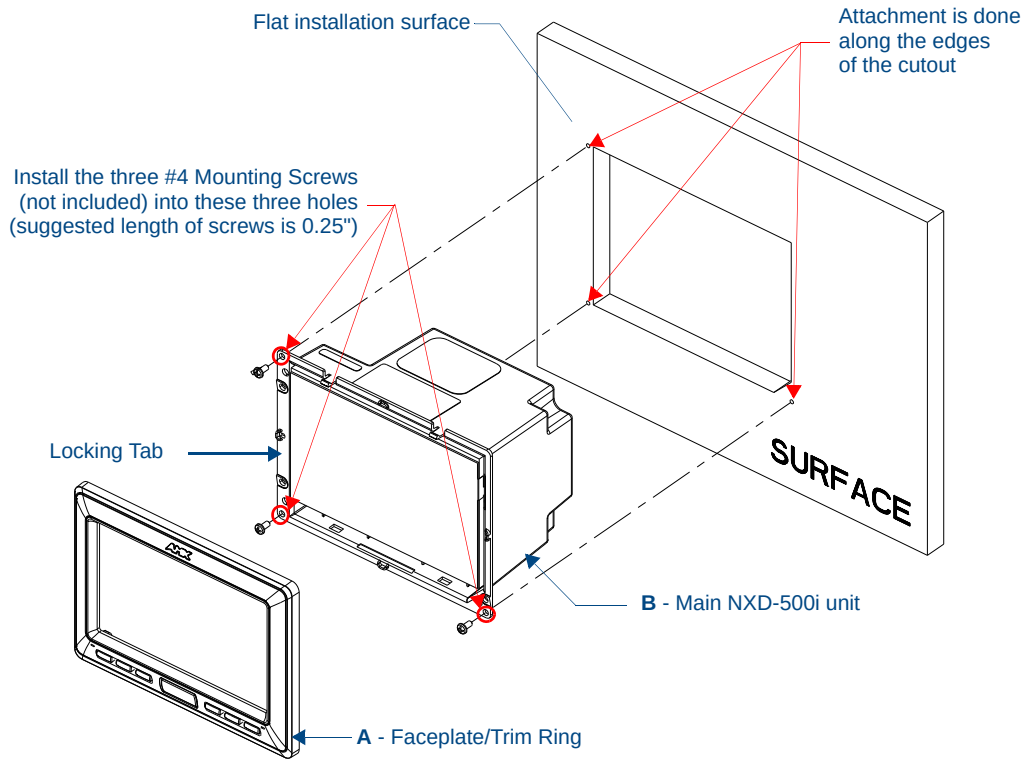
Flat installation surface
Attachment is done along the edges of the cutout
Install the three #4 Mounting Screws (not included) into these three holes (suggested length of screws is 0.25")
Locking Tab
SURFACE
B - Main NXD-500i unit
A - Faceplate/Trim Ring

FIG. 10 Wall Mount panel installation configuration for flat surfaces

NOTE

Do not disconnect the connectors from the touch panel. The unit must be installed with the necessary connectors before being inserted into the solid surface.

7. Carefully slide the main unit into the cutout, making sure that the locking tabs lie flush against the back box.
8. Insert and secure three #4 Mounting Screws (not included) into the corresponding holes located along the sides of the NXD-500i, using a grounded Phillips-head screwdriver, until the unit is secure and flush against the wall (FIG. 10).
9. Place the Faceplate/Trim Ring assembly (**A** in FIG. 10) back onto the device (**B** in FIG. 10). *Make sure to align the Microphone, Light, and PIR Motion sensor locations to their respective openings on the front bezel/faceplate.*

Installing an NXD-500i into a Rack Mount Kit (NXA-RK5)

The NXA-RK5 is a 19" (48.26 cm) wide metal rack-mount (with black matte finish) measuring 3 rack units high.

1. Remove the Faceplate/Trim Ring assembly from the main NXD-500i unit.
2. Thread the incoming Ethernet and USB wiring from their terminal sources through the surface opening, leaving enough slack in the wiring to accommodate any re-positioning of the panel.
3. Connect all data and power wiring connectors to their corresponding locations along the left side of the device.
   - The USB connectors can be from either a USB extension cable or a wireless USB RF transmitter.
4. Test the incoming wiring by connecting the panel connections to their terminal locations. Verify that the panel is receiving power from the PoE Injector and functioning properly.

Do not disconnect the connectors from the touch panel. The unit must be installed with the necessary connectors before being inserted into the equipment rack.

5. Carefully insert the device into the NXA-RK5.
6. Secure the panel to the NXA-RK5 mount by first inserting and then tightening the three included #4-40 screws.
7. Insert the NXA-RK5 (with the connected NXD-500i unit) into the equipment rack, making sure to align the screw holes along the sides on the NXA-RK5 with the holes in the equipment rack.
8. Use a grounded Phillips-head screwdriver to secure the NXA-RK5 to the equipment rack using the included #10-32 screws.
9. Place the Faceplate/Trim Ring assembly back onto the main NXD-500i device. Make sure to align the Microphone, Light, and PIR Motion sensor locations to their respective openings on the front faceplate/bezel.
10. Reconnect the terminal Ethernet and USB wiring to their respective terminal locations on the Ethernet port or NetLinx Master.

Wiring Guidelines for the NXD-500i Panel

The NXD-500i panel utilizes the Power over Ethernet protocol, where it draws power directly from its Ethernet connection. Because of this, the panel has no need for standard power inputs or outputs.

Ethernet/RJ-45 Port: Connections and Wiring

FIG. 11 describes the blink activity for the Ethernet 10/100 Base-T RJ-45 connector and cable. The Ethernet cable is connected to the side of the Wall Mount panels.

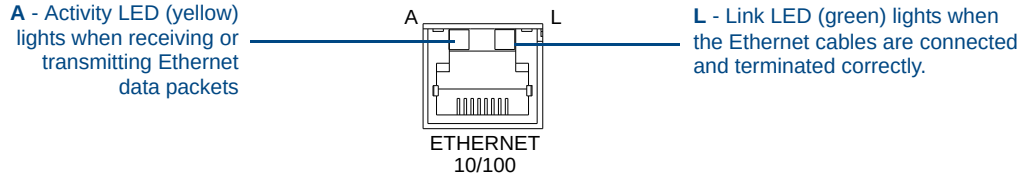
A - Activity LED (yellow) lights when receiving or transmitting Ethernet data packets
A
L
L - Link LED (green) lights when the Ethernet cables are connected and terminated correctly.
ETHERNET
10/100

FIG. 11 Ethernet connector (showing communication and connection LEDs)

The following table lists the pinouts, signals, and pairing for the Ethernet connector.

Ethernet RJ-45 Pinouts and Signals				
Pin	Signals	Connections	Pairing	Color
1	TX +	1 --------- 1	1 --------- 2	Orange-White
2	TX -	2 --------- 2		Orange
3	RX +	3 --------- 3	3 --------- 6	Green-White
4	PoE power	4 --------- 4		Blue
5	PoE power	5 --------- 5	4 --------- 5	Blue-White
6	RX -	6 --------- 6		Green
7	PoE power	7 --------- 7	7 --------- 8	Brown-White
8	PoE power	8 --------- 8		Brown

FIG. 12 diagrams the RJ-45 pinouts and signals for the Ethernet RJ-45 connector and cable.

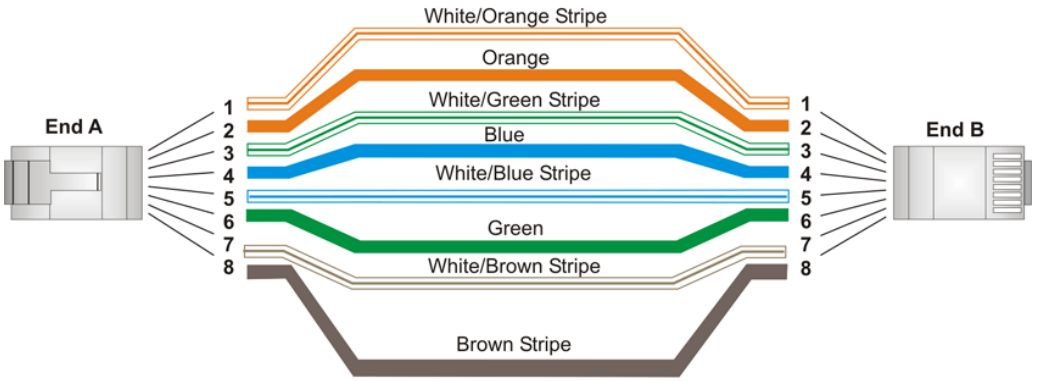

FIG. 12 RJ-45 wiring diagram

NXD-500i Touch Panel Accessories

Overview

The PS-POE-AF (FG423-80) is a Power-over-Ethernet (PoE) power supply with integral DC Injector (FIG. 13). It provides DC power for one PoE-equipped device by "Injecting" DC power through the CAT5 ethernet cable.

The PS-POE-AF supports the IEEE standard PoE pinout: Pins 4&5 Power (+) / Pins 7&8 Power (-).

FIG. 13 PS-POE-AF Power-Over-Ethernet Power Supply

Key features include:

- Power over Ethernet (PoE)
- 10/100/1000 (MbPS) Data Rates
- Self-contained Injector
- 100-240VAC Universal Input
- Desktop Style / Non-vented Case
- IEEE802.3af Compliant Detection, Disconnect, Overload and Over Voltage Control Function
- Load Diagnostic LED
- UNH IOL Test Report
- Over Load Shutdown and Short Circuit Protection
- Regulated Output With Low Ripple
- Meets Safety Agency Requirements
- Complies with EMI/RFI Regulations

Product Specifications

PS-POE-AF Specifications	
Output Specifications	
Combined Line and Load Voltage Regulation	Excluding Cord ±1%
Ripple	1% Vp-p max.
Transient Response	• 0.5ms for 50% • Load Change Typical
Protection	• Foldback Overcurrent Protection • Short Circuit Protection
Input Specifications	
AC Input Voltage Range	100-240VAC -10%, +6%
Line Frequency	47-63Hz
AC Input Current	• 90VAC Input • 0.6A max.
Protection	• Internal Primary Current Fuse • Inrush Limiting
General Specifications	
Topology	• Switching-Fixed • Frequency Flyback
Dielectric Withstand	• Primary-Secondary 3000VAC, 4250VDC • Secondary-Ground 500VDC
Spacing	5mm Primary-Secondary
Leakage Current	Less than 250 uA
Efficiency	• 65% Typical @ Max. Load • and 120VAC/60 Hz
Weight (excluding cord)	7 Ounces (200 Grams)
Dimension	• 5.24L x 2.13W x 1.42H (in) • 133.0L x 54.0W x 36.0H (mm)
Case Material	Black 94V0 Polycarbonate
Cord and Connectors	Dual RJ45 jacks built into the enclosure
EMC Information	
FCC	• Part 15 Class B • EN55022 Class B
Immunity	ESD: EN61000-4-2
RS	EN61000-4-3
EFT	EN61000-4-4
Surge	EN61000-4-5
CS	EN61000-4-6
Voltage Dip	EN61000-4-11
Harmonic	EN61000-3-2
CE	CE Compliant
Hold-up Time	• @120VAC 10ms min. typ. • @240VAC 40ms min. typ.
Approvals and Standards - Safety	• cULus: UL/CSA60950 • TUV: EN60950 • CE: LVD, EMCD
MTBF	100,000 Calculated Hours

PS-POE-AF Specifications (Cont.)	
Environmental Specifications	
Thermal Performance	• Operating Temperature 0° C to 40° C • No Derating • Convectional Cooling • Non Vented Case
Storage Temp	-30° C to +85° C
Relative Humidity	Non-Condensing 5% to 95%
Altitude	0-10,000 feet

Pin Connections

FIG. 14 describes the PoE Gigabit pin-out connections for the IN and OUT Ports on the rear panel of the PS-POE-AF:

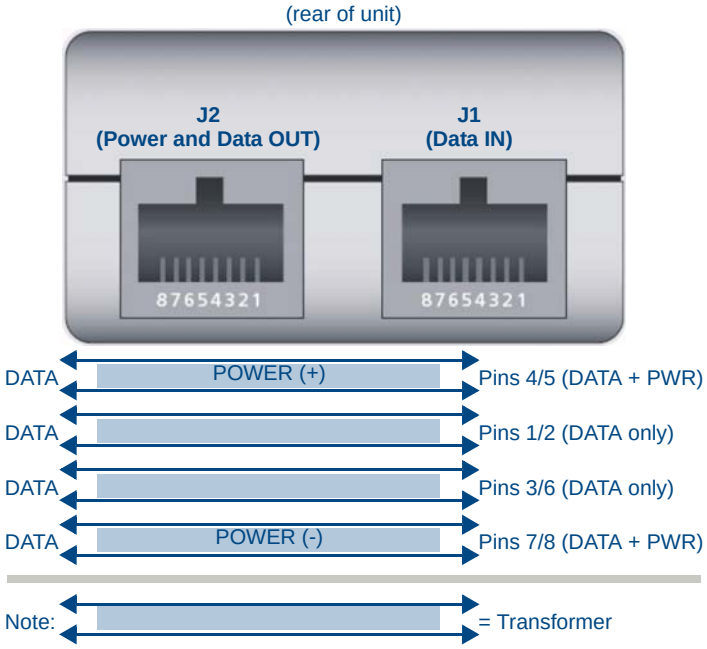

FIG. 14 PoE Gigabit pin-out connections

NOTE

*Each PoE Injector may be used for **one** device's power needs. Multiple devices in a network that require PoE will require multiple Injectors.*

Panel Calibration

Overview

This section outlines the steps for calibrating the touch panel. *Calibrating the panel before its initial use and after completing a firmware download is highly recommended.*

Modero panels are set up in the factory with specific demo touch panel pages.

The first splash screen that appears indicates the panel is receiving power, beginning to load firmware, and preparing to display the default touch panel pages.

When the panel is ready, the AMX Splash Screen is replaced by the Initial Panel Page.

Calibrating the Modero Panel

1. Press and hold the grey **Front Bezel** button (FIG. 15) for **8 seconds** to pass over the *Setup* page and access the *Calibrate setup* page (FIG. 16).

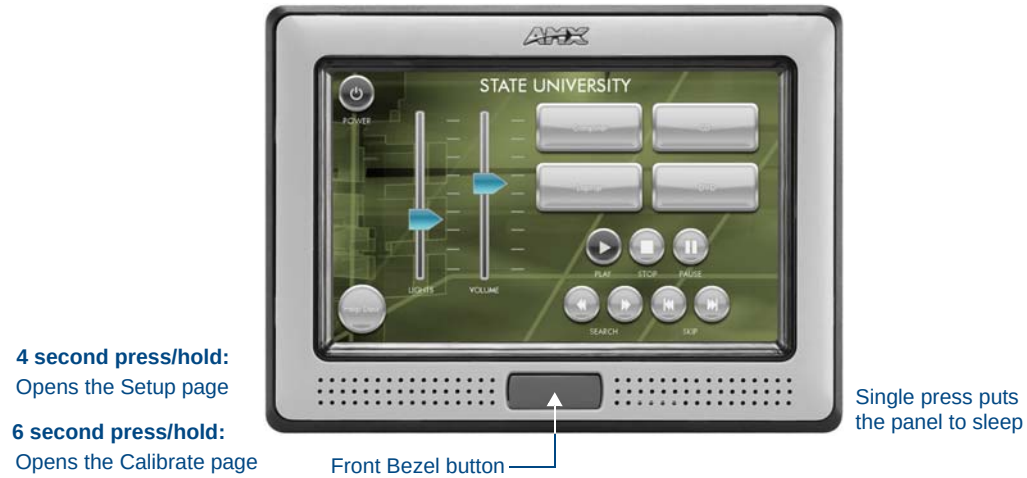

FIG. 15 Location of Front Setup Access button

2. Press the crosshairs (on the *Calibration* page) to set the calibration points on the LCD (FIG. 16).

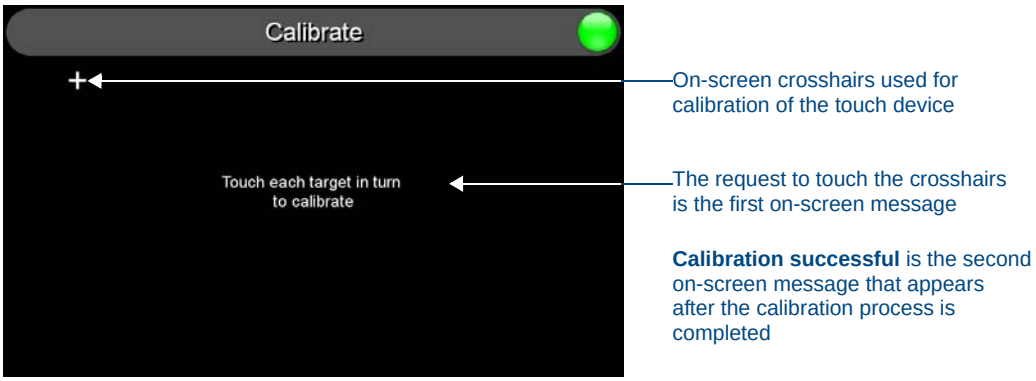
Calibrate
Touch each target in turn to calibrate
On-screen crosshairs used for calibration of the touch device
The request to touch the crosshairs is the first on-screen message
Calibration successful is the second on-screen message that appears after the calibration process is completed

FIG. 16 Touch Panel Calibrate Screens

3. After the "***Calibration Successful.***" message appears, press anywhere on the screen to continue and return to the *Setup* page.

If the calibration was improperly set and you cannot return to the Calibrate page through the panel's firmware, *this firmware page may be accessed via G4 WebControl, where you can navigate to the* Protected Setup *page and press the* ***Calibrate*** *button through a VNC window.*

This action causes the panel to go to the Calibrate *page seen above, where the actual touch panel may be physically calibrated again using the above procedures.*

Configuring Communication

Overview

Communication between the Modero panel and the Master is done using either **USB** or **ETHERNET** (**DHCP or Static IP**). Ethernet communication can only be achieved via a direct Ethernet connection.

WARNING

Before commencing, verify that you are using the latest NetLinx Master and Modero panel firmware, and also verify you are using the latest versions of AMX's NetLinx Studio and TPDesign4 applications. These are available at ***www.amx.com****.*

NOTE

USB input devices must be plugged into the rear or side USB connectors before the G4 panel is powered-up. The panel will not detect a USB connection of this type until after the unit cycles power.

Modero Setup and System Connection

1. Press the **Front Setup Access** button for **3 seconds** to open the *Setup* page (FIG. 17).

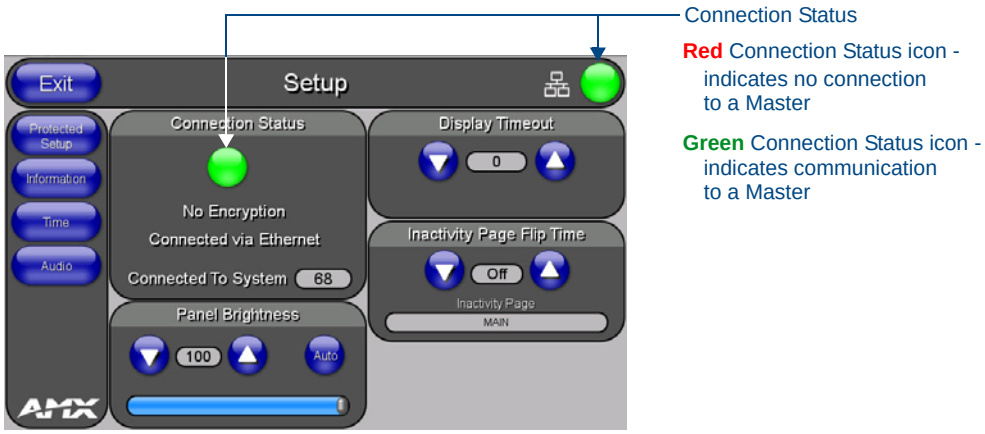

FIG. 17 Setup page

2. Press the **Protected Setup** button (located on the lower-left of the panel page) to open the *Protected Setup* page and display an on-screen keypad.
3. Enter ***1988*** into the Keypad's password field and press **Done** when finished.

NOTE

Clearing Password #5, from the initial Password Setup page, removes the need for you to enter the default password before accessing the Protected Setup page.

4. Press the red *Device Number* field to open the Device Number keypad.
5. Enter a **Device Number** for the panel into the Device Number Keypad*. The default is 0 and the range is from 1 - 32000.*

NOTE

When using multiple panels within a NetLinx System, remember to assign unique Device Number values to each panel, so that all assigned panels appear in the System listing for the target Master.

6. Press **Done** to close the keypad, assign the number, and return to the *Protected Setup* page.
7. Press the on-screen **Reboot** button to restart the panel and incorporate any changes.

NOTE

Before continuing, open NetLinx Studio. This program assists in developing a System Number, Master IP/URL, and Master Port number. Refer to the NetLinx Master's instruction manual for more information.

8. Obtain the System Number and Master IP Address from NetLinx Studio. This information must be specific for the system used with the configured Modero panel.
9. Press the **Front Setup Access** button for **4 seconds** to open the *Setup* page.
10. Press the **Protected Setup** button (located on the lower-left of the panel page) to open the *Protected Setup* page.
11. Press the **System Settings** button (located on the *Protected Setup* page) to open the *System Settings* page (FIG. 18) and begin configuring the communication settings on the panel to match those of the target Master.

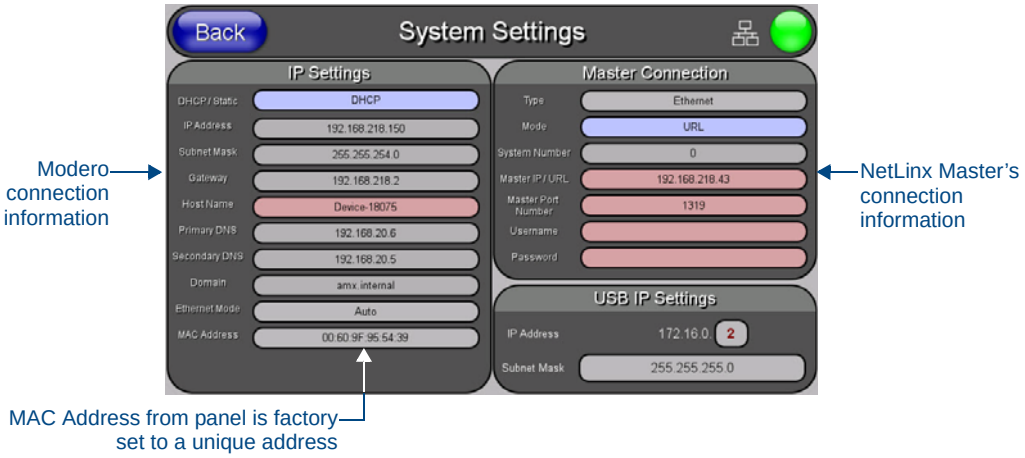

FIG. 18 System Settings page

NOTE

*The two possible Master Connection Types available are **USB** or **Ethernet**.*
*A USB connection type is a **direct connection** from the panel's mini-USB port to a corresponding USB port on the PC, which is acting as a Virtual Master.*
An Ethernet connection type involves indirect communication from the panel to a Master via an Ethernet connection to the network.

WARNING

It is recommended that firmware KIT files only be transferred over a direct connection and only when the panel is connected to a power supply.

NOTE

*The mini-USB connector **MUST** be plugged into a panel that is already active before the PC can recognize the connection and assign an appropriate USB driver.*

Configuring and Using USB with a Virtual Master

NetLinx Studio can be set up to run a Virtual Master where the PC acts as the Master by supplying its own IP Address for communication to the panel. The PC is first equipped with the USB driver, the panel is then configured for USB communication, and then Studio is configured to act as the Master.

For a personal computer to establish a connection to a Modero panel via USB, the target computer must have the appropriate AMX USB driver installed. This installation is bundled into the latest TPDesign4 software setup process or can be downloaded independently from the main *Application Files* page on **www.amx.com**.

Step 1: Setup the Panel and PC for USB Communication

1. If you do not currently have the latest version of TPDesign4, navigate to **www.amx.com > Tech Center > Downloadable Files > Application Files > NetLinx Design Tools** section of the website and locate the File Transfer 2 executable (**FT2Setup.exe**). This will install the native RNDIS USB driver when executed.
2. Download this executable file to a known location on your computer.
3. Launch the Setup.exe file and follow the on-screen prompts to complete the installation.

Step 2: Confirm the Installation of the USB Driver on the PC

The first time each AMX touch panel is connected to the PC, it is detected as a new hardware device and the panel-specific USBLAN driver becomes associated with it. Each time thereafter, the panel is "recognized" as a unique USBLAN device and the association to the driver is done in the background.

When the panel is detected for the **first time**, some user intervention is required during the association between panel and driver.

1. After the installation of the USB driver has been completed, confirm the proper installation of the large Type-A USB connector to the PC's USB port, and restart the PC.

If the panel is already powered, continue with step 3.
The panel MUST be powered and configured for USB communication before connecting the mini-USB connector to the panel's Program Port.

2. Connect the terminal end of the Ethernet cable to the connector on the side of the touch panel and then apply power.
3. After the NXD-500i panel powers up, press and hold the **Front Setup Access** button for 4 seconds to continue with the setup process and proceed to the *Setup* page.
4. **I**nsert the mini-USB connector into the Program Port on the panel.

   It may take a minute for the panel to detect the new connection and send a signal to the PC, as indicated by a green System Connection icon.

   If this is the first time for installing the USB driver, a USB driver installation popup window appears on the PC.

   - This window states that the panel has been detected by the PC as a USB-compliant device and the PC is installing an appropriate USB driver to establish a proper communication to the panel.
   - This driver was installed on the PC during the installation of the latest NetLinx Studio and TPDesign4 software application installations.

     These applications should be installed prior to setting up a USB connection to the panel.
   - Windows® notes that the driver does not contain a Microsoft® digital signature.
5. Click **Yes** when told that a digital signature was not found. This action accepts the installation of the new AMX USB driver. The panel is now configured to communicate directly with the PC.
   - This process completes the association between driver and device. Each time the same touch panel is connected to the computer, the driver is automatically loaded (*using a unique name - example USB LAN LINK #1, #2*). Each time a different touch panel is connected to the computer, the previous procedures will need to be repeated.
6. Navigate back to the *System Settings* page.

Step 3: Confirm and View Current AMX USB Device Connections

The USB driver information can be confirmed via two different methods:

- Via the Control panel (previous steps 1 and 2) or
- Via the **Unplug or Eject Hardware** icon from the Taskbar.

1. Navigate to **Start > Settings > Control Panel >** and double-click the **System** icon to launch the System Properties dialog.
2. Select the **Hardware** tab and click on the **Device Manager** button to launch the Device Manager dialog.
   - Within the *Device Manager* dialog, the AMX USBLAN device appears under Network Adapters (FIG. 19) and has a unique name such as AMX USB LAN LINK #2.
   - The number changes depending on which recognized panel is currently connected.

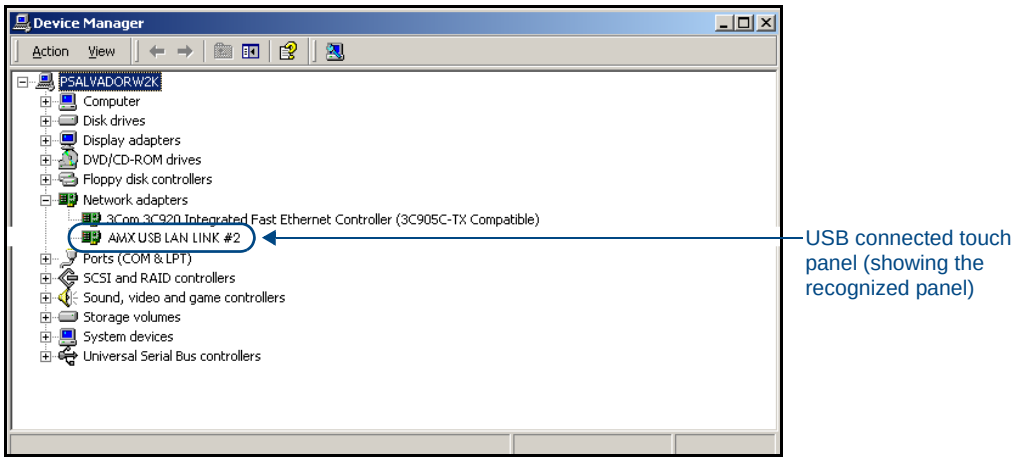

FIG. 19 Device Manager dialog showing USB device

3. Confirm that a new USB detection icon (FIG. 20) appears in the lower-right taskbar on the PC display window.
4. Double-click on the icon to open the **Unplug or Eject Hardware** window and confirm the AMX USB LAN LINK has been installed and is operating properly.

NOTE

A Virtual NetLinx Master (VNM) is used when the target panel is not connected to a physical NetLinx Master. In this situation, the PC takes on the functions of a Master via a Virtual NetLinx Master.
This connection is made by either using the PC's Ethernet Address, via TCP/IP using a known PC's IP Address as the Master, or using a direct mini-USB connection to communicate directly to the panel.

5. Click the **Properties** button to view further information about the installed USB driver.

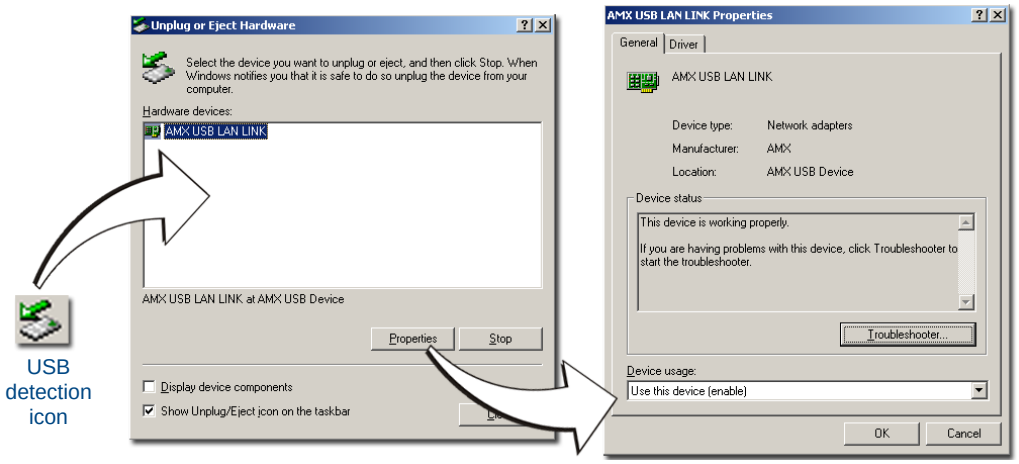
USB detection icon
Unplug or Eject Hardware
Select the device you want to unplug or eject, and then click Stop. When Windows notifies you that it is safe to do so unplug the device from your computer.
Hardware devices:
AMX USB LAN LINK
AMX USB LAN LINK at AMX USB Device
Properties
Stop
Display device components
Show Unplug/Eject icon on the taskbar
AMX USB LAN LINK Properties
General
Driver
AMX USB LAN LINK
Device type: Network adapters
Manufacturer: AMX
Location: AMX USB Device
Device status
This device is working properly.
If you are having problems with this device, click Troubleshooter to start the troubleshooter.
Troubleshooter...
Device usage:
Use this device (enable)
OK
Cancel

FIG. 20 USB Properties windows

NOTE

If a yellow exclamation point appears next to the AMX USB LAN LINK device (within the hardware devices section of the Unplug or Eject Hardware window), stop and close the USB operation. Reconnect the USB cable to the panel and repeat the setup procedures. Refer to the Troubleshooting section on page 129 *for more detailed information.*

To remove the USB driver association from a previously connected touch panel, navigate back to the Device Manager, right-click on the panel's USB driver (example AMX USB LAN LINK #2) and select **Uninstall** from the context menu and then **OK**.

- Once the system completes the removal of the device, the *Device Manager* window will refresh, and the device will no longer appear.
- The next time this device is connected to the computer, it will appear as a new hardware device and will need to be associated again with the driver (refer to *Step 2: Confirm the Installation of the USB Driver on the PC* section on page 25 for more information).

Step 4: Configure a Virtual Master (using NetLinx Studio) for USB

Before beginning:

1. Verify the panel has been configured to communicate via USB within the *System Settings* page and that the USB driver has been properly configured. Refer to the previous section for more information.
2. Launch NetLinx Studio (default location is **Start > Programs > AMX Control Disc > NetLinx Studio**).
3. Select **Settings > Master Communication Settings**, from the *Main* menu to open the *Master Communication Settings* dialog (FIG. 21).

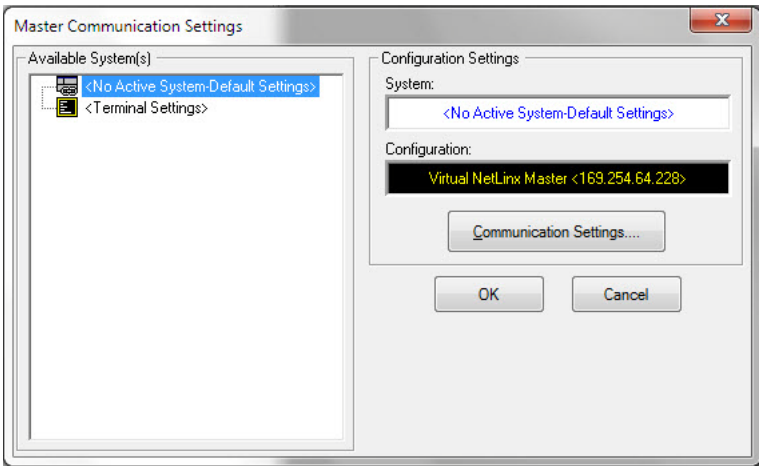

FIG. 21 Master Communication Settings dialog box

4. Click the **Communications Settings** button to open the *Communications Settings* dialog (FIG. 22).

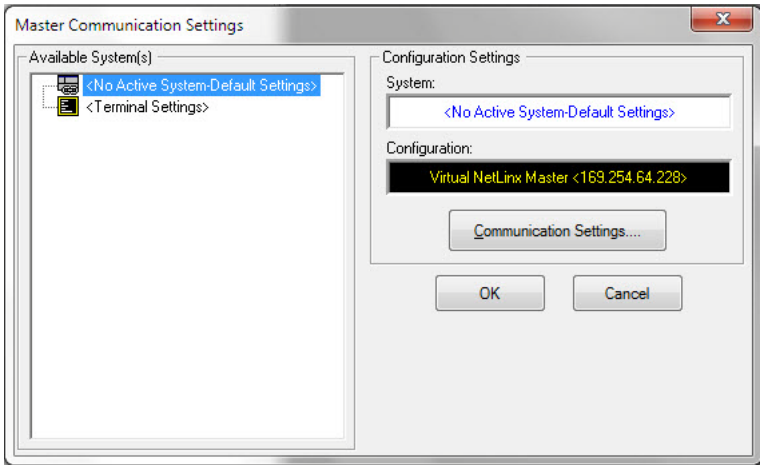

FIG. 22 Communications Settings dialog box

5. Click on the **NetLinx Master** radio button in the *Platform Selection* section to indicate that this is working as a NetLinx Master.
6. Click on the **Virtual Master** radio box from the *Transport Connection Option* section to configure the PC to communicate directly with a panel. Everything else, such as the Authentication, is greyed out because this action is not going through the Master's UI.
7. Click the **Edit Settings** button on the *Communications Settings* dialog to open the *Virtual NetLinx Master Settings* dialog (FIG. 23).

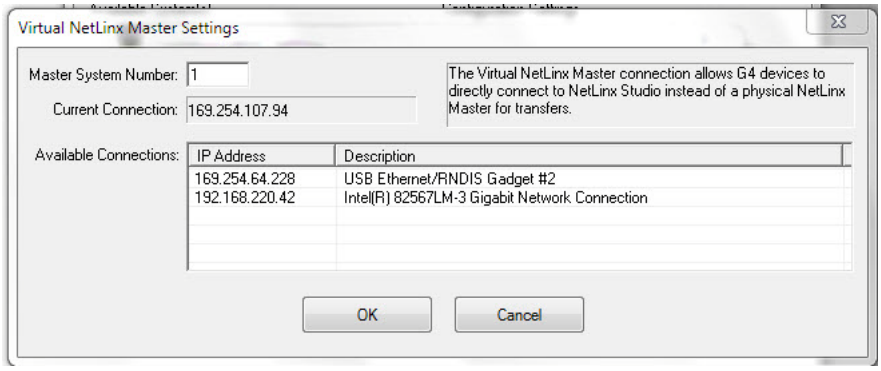

FIG. 23 Virtual NetLinx Master Settings dialog box

8. From within this dialog, enter the System number (default is **1**).
9. Click **OK** three times to close the open dialogs, save the settings, and return to the main NetLinx Studio application.
10. Click the **OnLine Tree** tab in the Workspace window to view the devices on the Virtual System. *The default System value is one*.
11. Right-click on the *Empty Device Tree/System* entry and select **Refresh System** to re-populate the list.

    The panel will not appear as a device below the virtual system number (in the Online Tree tab) until the system number used in Sep 7 for the VNM is entered into the Master Connection section of the System Settings page.

    - The Connection Status icon turns green after a few seconds to indicate an active USB connection to the Virtual Master on the PC. No Lock icon is displayed because this USB connection is not secured and does not require a username and password.
    - If a few minutes have gone by and the Connection Status icon still does not turn green, repeat the USB connection and Virtual Master setup procedures (outlined in this section). Refreshing the System sends out a request to the panel to respond and completes the communication (*turning the System Connection icon green*).

12. The *USB* icon will appear to the left of the Connection Status icon to signify an active USB connection (FIG. 24).

FIG. 24 USB icon

NOTE

If the G4 panel does not appear, refer to the Troubleshooting section on page 129 *for more information.*

Step 5: Confirm and View the current AMX USB device connections

Use the CC-USB Type-A to Mini-B 5-wire programming cable (**FG10-5965**) to provide communication between the mini-USB Program port on the touch panel and the PC. This method of communication is used to transfer firmware KIT files and TPD4 touch panel files.

NOTE

A mini-USB connection is only detected after it is installed onto an active panel. Connection to a previously powered panel which then reboots, allows the PC to detect the panel and assign an appropriate USB driver.

1. Verify this direct USB connection (Type-A on the panel to mini-USB on the panel) is configured properly using the steps outlined in the previous two sections.
2. With the panel already configured for USB communication and the Virtual Master setup within NetLinx Studio, its now time to verify the panel is ready to receive files.
3. Click the **OnLine Tree** tab in the *Workspace* window to view the devices on the Virtual System. *The default System value is one*.
4. Right-click on the System entry (**A** in FIG. 25) and select **Refresh System**. This causes a refresh of all project systems, establishes a new connection to the Virtual Master, and populates the System list with devices on your particular system.

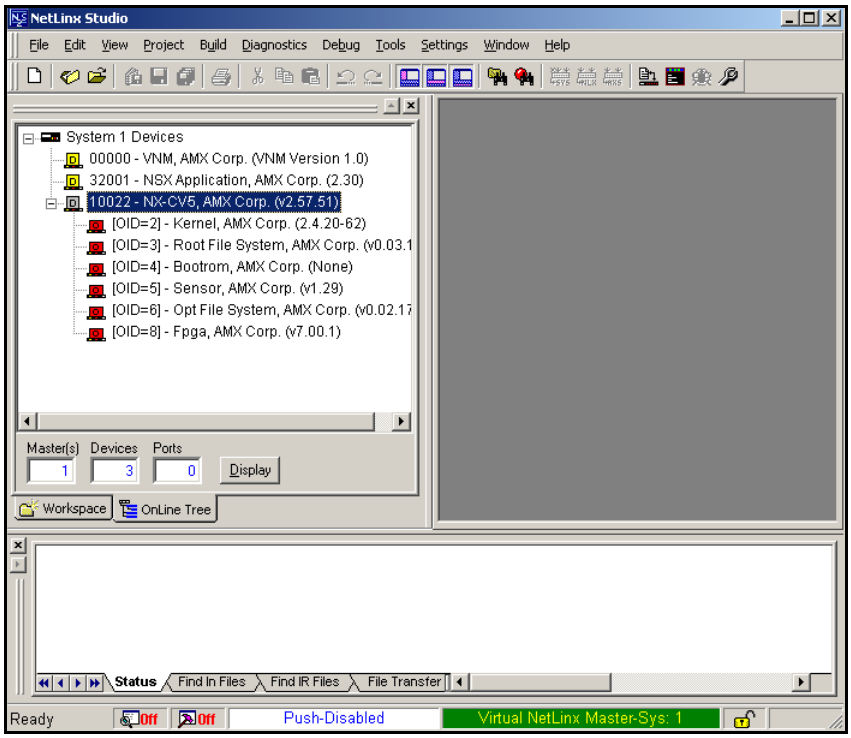
NetLinx Studio
File Edit View Project Build Diagnostics Debug Tools Settings Window Help
System 1 Devices
00000 - VNM, AMX Corp. (VNM Version 1.0)
32001 - NSX Application, AMX Corp. (2.30)
10022 - NX-CV5, AMX Corp. (v2.57.51)
[OID=2] - Kernel, AMX Corp. (2.4.20-62)
[OID=3] - Root File System, AMX Corp. (v0.03.1
[OID=4] - Bootrom, AMX Corp. (None)
[OID=5] - Sensor, AMX Corp. (v1.29)
[OID=6] - Opt File System, AMX Corp. (v0.02.17
[OID=8] - Fpga, AMX Corp. (v7.00.1)
Master(s) Devices Ports
1 3 0
Display
Workspace
OnLine Tree
Status
Find In Files
Find IR Files
File Transfer
Ready
Off
Off
Push-Disabled
Virtual NetLinx Master-Sys: 1

FIG. 25 Repopulating the System List

Configuring a Wired Ethernet Connection

It is necessary to tell the panel as to which Master it should be communicating. This "pointing to a Master" is done via the *System Settings* page, where the IP Address, System Number and Username/Password information assigned to the target Master is configured.

Until those parameters are configured, your Connection Status icon will remain red, indicating that it has no current connection to a Master.

Step 1: Configure the Panel's Wired IP Settings

This panel has only one method of communicating to a target Master over the Internet: *Wired* (direct Ethernet connection, as wireless communication is not available on the NXD-500i).

The connection parameters may only be configured through the System Connection page. This type of communication can be established either via either a Dynamic IP Address (*DHCP*) or via a pre-reserved Static IP Address (*typically provided by your System Administrator*).

IP Settings section - Configuring a DHCP Address over Ethernet

1. Select **Protected Setup > System Settings** (located on the lower-left) to open the *System Settings* page.
2. Locate the *IP Settings* section of this page.

Even though the Host, Gateway, Primary DNS, Secondary DNS, and Domain fields appear on the two separate System Connection and Secondary Connection pages; ***the information populating these fields is identical.***
If the information within one of these fields is altered, the change is reflected on both pages within the altered field.
Example*: if the domain is altered on the Secondary Connection page, the value is then also changed within the Domain field of the System Connection page.*

3. Toggle the *DHCP/Static* field (***from the IP Settings section***) until the choice cycles to **DHCP**.

DHCP will register the unique factory-assigned MAC Address on the panel, and once the communication setup process is complete, reserve an IP Address, Subnet Mask, and Gateway values from the DHCP Server.

4. Press the optional *Host Name* field to open a Keyboard and enter the Host Name information.
5. Press **Done** after you are finished assigning the alpha-numeric string of the host name.
6. Do not alter any of the remaining greyed-out fields in the IP Settings section. *Once the panel is rebooted, these values are obtained by the unit and displayed in the DNS fields after power-up*.

This information can be found in either the: Workspace- System name > Define Device section of the code that defines the properties for the panel, or in the Device Addressing/Network Addresses in the ***Tools > NetLinx Diagnostics*** *dialog.*

7. Press the **Back** button to return to the Protected Setup page.
8. Press the on-screen **Reboot** button to save any changes and restart the panel.

IP Settings section - Configuring a Static IP Address over Ethernet

1. Select **Protected Setup > System Settings** located on the lower left to open the *System Settings* page.
2. Locate the *IP Settings* section of this page.

Check with your System Administrator for a pre-reserved Static IP Address assigned to the panel. This address must be obtained before Static assignment of the panel continues.

3. Toggle the *DHCP/Static* field (***from the IP Settings section***) until the choice cycles to **Static**.
4. Press the *IP Address* field to open a Keyboard and enter the Static IP Address provided by your System Administrator.
5. Press **Done** after you are finished entering the IP information.
6. Repeat the same process for the *Subnet Mask* and *Gateway* fields.
7. Press the optional *Host Name* field to open the Keyboard and enter the Host Name information.
8. Press **Done** after assigning the alpha-numeric string of the host name.
9. Press the *Primary DNS* field to open a Keyboard, enter the Primary DNS Address provided by your System Administrator, and press **Done** when compete. Repeat this process for the *Secondary DNS* field.
10. Press the *Domain* field to open a Keyboard, enter the resolvable domain Address provided by your System Administrator, and press **Done** when complete.
11. Navigate to the *Master Connection* section of this page to begin configuring the communication parameters for the target Master.

Step 2: Choose a Master Connection Mode Setting

The Master Connection section of the System Connection page uses three Ethernet MODE settings.

- **URL** is the most common method.
- **Master Connection MODE** options:
  - **URL** (**Uniform Resource Locator**) is the address that defines the route to a file on the Web or any other Internet facility.
    In this system, the panel acts as a "Client" and the Master acts as a Server (in that Clients attach to it).
  - **LISTEN** sets the Modero panel to "listen" for broadcasts from the Master (using the panel IP from its URL list). In this system, the panel acts as a "Server" (in that Clients attach to it) and the Master acts as a "Client".
  - **AUTO** is used to instruct the Modero to search for a Master that uses the same System Number (assigned within the Master Connection section) and resides on the same Subnet as itself. In this case, the Master has its UDP feature enabled.
    This **UDP** (**User Datagram Protocol**) is a protocol within the TCP/IP protocol suite that is used in place of TCP when a reliable delivery is not required.
    This UDP enabling is done through a Telnet session on the Master. Refer to the installation manual for the particular NetLinx Master for more detailed information.

Step 3: Configure an Ethernet Connection Type

When using Ethernet as the selected communication method, the NetLinx Master must first be set up with either a Static IP or DHCP Address obtained from either NetLinx Studio or your System Administrator.

Before beginning:

1. Verify that the panel has been configured to communicate through an Ethernet cable connected from the panel to a valid Ethernet Hub.

Before commencing, verify that the NetLinx Master is using the latest available version of its firmware.

2. Verify that the NetLinx Master is receiving power and is communicating via an Ethernet connection with the PC running NetLinx Studio.
3. Verify that the green Ethernet LED on the rear Ethernet port on the Master is illuminated, indicating a proper connection.
4. Verify that the yellow LED on the rear Ethernet port on the Master is blinking, indicating communication with the device.
5. After the panel powers-up, press and hold the **Front Setup Access** button for 3 seconds to proceed to the *Setup* page.
6. Select **Protected Setup > System Settings** (located on the lower-left) to open the *System Settings* page (FIG. 26).

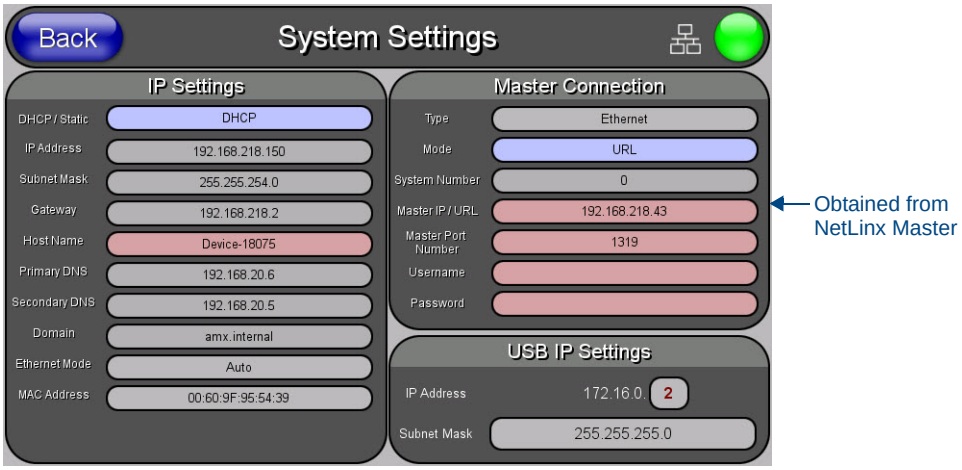

FIG. 26 System Connection page

Master Connection Section - Virtual Master communication over Ethernet

When configuring the panel to communicate with a Virtual Master (on your PC) via Ethernet, the Master IP/URL field must be configured to match the IP Address of the PC. Make sure to use the Virtual System value assigned to the Virtual Master within NetLinx Studio.

Before beginning:

1. Verify that the panel has been configured to communicate through an Ethernet cable connected from the panel to a valid Ethernet Hub.
2. Launch NetLinx Studio (default location is **Start > Programs > AMX Control Disc > NetLinx Studio**).
3. Select **Settings > Master Communication Settings**, from the Main menu to open the *Master Communication Settings* dialog (FIG. 21).

4. Click the **Communications Settings** button to open the *Communications Settings* dialog (FIG. 22).
5. Click on the **NetLinx Master** radio button from the *Platform Selection* section to indicate that you are working as a NetLinx Master.
6. Click on the **Virtual Master** radio box from the *Transport Connection Option* section to indicate you are wanting to configure the PC to communicate with a panel.

   All other fields will be greyed out because the Master's UI is not being used.
7. Click the **Edit Settings** button on the *Communications Settings* dialog to open the *Virtual NetLinx Master Settings* dialog (FIG. 23).
8. From within this dialog, enter the System number (***default is 1***) and note the IP Address of the target PC being used as the Virtual Master.

   This IP Address can also be obtained by following these procedures:

   a. On your PC, click **Start > Run** to open the *Run* dialog.
   b. Enter **cmd** into the Open field and click **OK** to open the command DOS prompt.
   c. From the **C:\>** command line, enter **ipconfig** to display the IP Address of the PC. This information is entered into the *Master IP/URL* field on the panel.
9. Click **OK** three times to close the open dialogs, save your settings, and return to the main NetLinx Studio application.
10. Click the **OnLine Tree** tab in the Workspace window to view the devices on the Virtual System.

    *The default System value is **one**.*
11. Right-click on the *Empty Device Tree/System* entry and select **Refresh System** to re-populate the list.
12. Power-up your panel and press and hold the grey Front Setup Access button (**for 3 seconds**) to continue with the setup process and proceed to the Setup page.
13. Select **Protected Setup > System Settings**, located on the lower left, to open the *System Settings* page (FIG. 27).

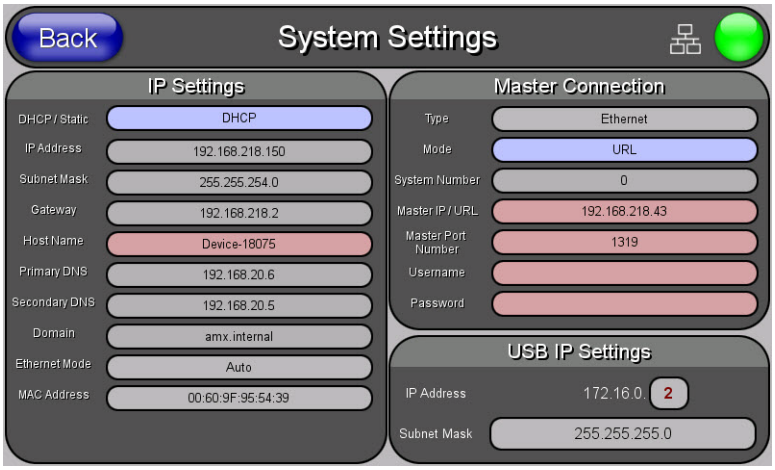

FIG. 27 Sample System Connection page (for Virtual Master communication)

- The **System Number** is assigned to the Master within the NetLinx Studio application (these must match)
- Enter the IP Address information of the PC used the Virtual Master in the **Master IP/URL** field.
- When using a Virtual Master, there is no need to enter a User Name and Password.

14. Press the *Master IP/URL* field to open a Keyboard and enter the IP Address of the PC used as the Virtual Master.
15. Click **Done** to accept the new value and return to the *System Settings* page.
16. Do not alter the Master Port Number value. This is the default value used by NetLinx.
17. Press the **Back** button to return to the *Protected Setup* page.

Master Connection Section - NetLinx Master Ethernet IP Address - URL Mode

In this mode, enter the System Number (**zero** for an unknown System Number) and the IP/URL of the Master (the Master Port Number is defaulted to **1319**).

1. In the *System Settings* page, press the *Mode* field until the choice cycles to **URL**.
   - By selecting **URL**, the System Number field becomes read-only (grey) because the panel pulls this value directly from the communicating target Master, virtual or not. A Virtual Master system value can be set within the active AMX software applications such as NetLinx Studio, TPD4, or IREdit.

If the panel does not appear within the OnLine Tree tab of the Workspace window of NetLinx Studio, check to make sure that the NetLinx Master System Number from within the Device Addressing dialog is correctly assigned.

2. Press the *Master IP/URL* field to open a Keyboard and enter the Master IP Address obtained from the *Diagnostics - Networking Address* dialog of the NetLinx Studio application.
3. Click **Done** to accept the new value and return to the *System Connection* page.
4. Do not alter the Master Port Number value. This is the default value used by NetLinx.
5. Enter a username and password (*into their respective fields*) if the target Master has been previously secured.
6. Press the **Back** button to return to the *Protected Setup* page.

Master Connection Section - NetLinx Master Ethernet IP Address - Listen Mode

In this mode, add the Modero panel IP Address into the URL List of the Master by using NetLinx Studio. This mode sets the Modero panel to "listen" for broadcasts from the Master (using the panel IP from its URL list).

1. Obtain either a Static IP for the Modero panel (from your System Administrator) or a DHCP Address from the IP Settings of the System Connection page.
   - The *DHCP/Static* field, in the *IP Settings* section of the *System Settings* page, must be set to **DHCP** to get Dynamic IP information for the panel.
   - Press the on-screen **Reboot** (from the *Protected Setup* page) to save any changes and restart the panel.
   - After power-up, press the front button for **3 seconds** to access the *Setup* page.
   - Navigate to the **Setup > Protected Setup > System Settings** page and note the newly obtained Dynamic IP Address information from the *IP Settings* section. This information is then entered into the URL List for the connected NetLinx Master.
2. Toggle the *Type* field until **Ethernet** is selected (*from the Master Connection section of the System Connection page*).
3. Press the *Mode* field (to set the connection Mode) until the choice cycles to **Listen**. The *System Number* and *Master IP/URL* fields are then greyed out.
4. Enter a username and password into their respective fields if the target Master has been previously secured.
5. Select the **OnLine Tree** tab from the *Workspace* window.
6. Enter the **System** and **Device** number for the specific Master associated with the touch panel as seen in the *OnLine Tree* tab.
7. Click **Add** and enter the IP Address of the Modero touch panel into the *Add URL* dialog.
8. Click **OK** to enter the IP Address and add it to the list.
9. Click **Done** when finished adding your panel information to the list.

Master Connection Section - NetLinx Master Ethernet IP Address - Auto Mode

In this mode, enter the System Number of the NetLinx Master.

This mode instructs the Modero to search for a Master that uses the same System Number (assigned within the *Master Connection* section) and **resides on the same Subnet as itself.**

1. In the *System Settings* page, press the *Mode* field until the choice cycles to the word **Auto**.
2. Press the *System Number* field to launch a Keypad and enter the value for the system number of the NetLinx Master. This value can be obtained from the **NetLinx Studio program > OnLine Tree** of the Workspace window.
3. Do not alter the *IP Settings* section of the *System Settings* page, as these fields are not applicable to this connection mode.
4. Enter a username and password into their respective fields if the target Master has been previously secured.
5. Press the **Back** button to open the *Setup* page and confirm an active connection.

NOTE

The NetLinx Master and the Modero panel must both be on the same Subnet.

Using G4 Web Control to Interact with a G4 Panel

The *G4 Web Control* feature allows a PC to interact with a G4-enabled panel via the web. This feature works in tandem with the browser-capable NetLinx Security firmware update (***build 300 or higher***). G4 Web Control is only available with the latest Modero panel firmware. Refer to the *G4 Web Control Settings Page* section on page 59 for more detailed information on G4 Web control.

NOTE

*Verify that the NetLinx Master (ME260/64 or NI-Series) has been installed with the latest firmware KIT file from **www.amx.com**.*
Refer to the NetLinx Master instruction manual for more detailed information on the use of the new web-based NetLinx Security.

1. Press the **Front Setup Access** button for 3 seconds to open the *Setup* page.
2. Press the **Protected Setup** button located on the lower-left of the panel page to open the *Protected Setup* page and display an on-screen keypad.
3. Enter ***1988*** into the Keypad's password field (***1988*** *is the default password*) and press **Done** when finished.

NOTE

Clearing Password #5, from the initial Password Setup page, removes the need to enter the default password before accessing the Protected Setup page.

4. Press the **G4 WebControl** button to open the *G4 Web Control* page (FIG. 28).

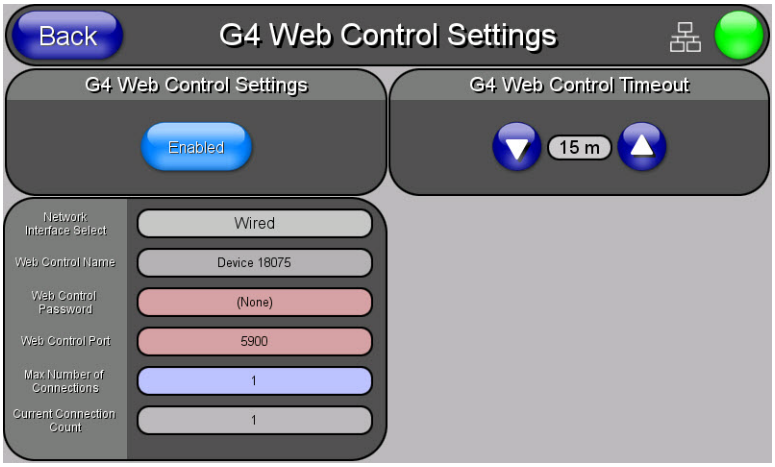

FIG. 28 G4 Web Control page

5. Press the **Enable/Enabled** button until it toggles to **Enabled** (*light blue color*).
6. The *Network Interface Select* field is read-only and displays the method of communication to the web. Verify the selection of the proper interface connection, as this field does not auto-detect the connection type being used (*see below*).
   - **Wired** is used when a direct Ethernet connection is being used for communication to the web. This is the default setting if no wireless interface card is detected or if both an Ethernet and wireless card connection is detected by the panel.
   - **Wireless** is used when a wireless card is detected within the internal card slot. The NXD-500i panel does not provide wireless communication, so this option is not available.
7. Press the *Web Control Name* field to open the *Web Name* keyboard.
8. From the *Web Name* keyboard, enter a unique alphanumeric string to identify this panel and press **Done** when finished.

   This information is used by the NetLinx Security Web Server to display on-screen links to the panel. *The on-screen links use the IP Address of the panel and not the name for communication* (FIG. 29).

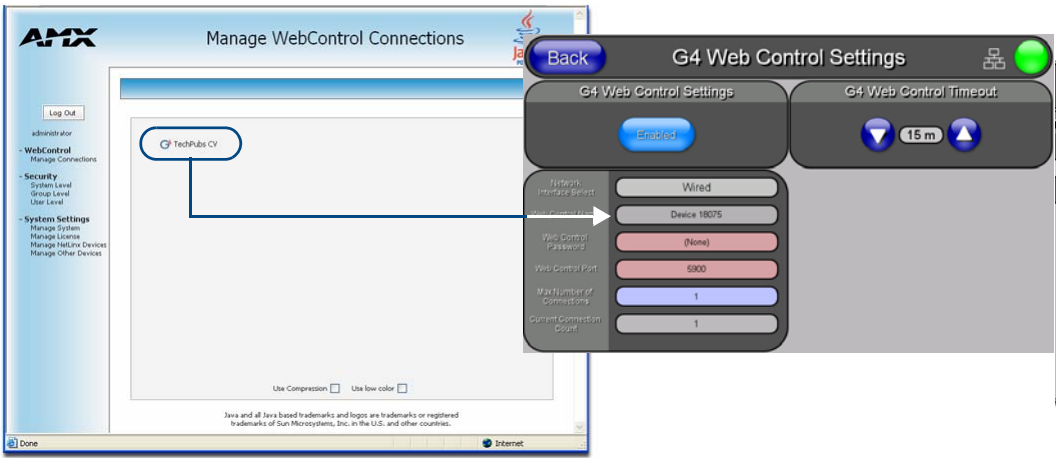

FIG. 29 Sample relationship between G4 Web Control and Mange WebControl Connections window

9. Press the *Web Control Password* field to open the *Web Password* keyboard.
10. From the Web Password keyboard, enter a unique alpha-numeric string to be assigned as the G4 Authentication session password associated with VNC web access of this panel. Press Done when finished.
11. Press the *Web Control Port* field to open the Web Port Number keypad.

12. Within the keypad, enter a unique numeric value to be assigned to the port being used by the VNC Web Server and press **Done** when finished. The default value is ***5900***. *The remaining fields within the G4 Web Control Settings section of this page are read-only and cannot be altered.*
13. Press the **Up/Down** arrows on either sides of the G4 Web Control *Timeout* field to increase or decrease the amount of time the panel can remain idle (***no cursor movements***) before the session is closed and the user is disconnected.
14. Press the **Back** button to return to the *Protected Setup* page.
15. Press the on-screen **Reboot** button to save any changes and restart the panel.

NOTE

Verify that the NetLinx Master's IP Address and System Number have been properly entered into the Master Connection section of the System Connection page.

Using the NetLinx Master to control the G4 panel

Refer to the particular NetLinx Master's instruction manual for detailed information on how to download the latest firmware from **www.amx.com**.

This firmware build enables SSL certificate identification and encryption, HTTPS communication, ICSP data encryption, and disables the ability to alter the Master security properties via a TELNET session.

NOTE

In order to fully utilize the SSL encryption, your web browser should incorporate the an encryption feature. This encryption level is displayed as a Cipher strength.

Once the Master's IP Address has been set through NetLinx Studio:

1. Launch your web browser.
2. Enter the IP Address of the target Master (***ex: http://198.198.99.99***) into the web browser's *Address* field.
3. Press the **Enter** key on your keyboard to begin the communication process between the target Master and your computer.
   - Initially, the Master Security option is disabled from within the *System Security* page, and no username and password is required for access or configuration.
   - Both HTTP and HTTPS Ports are enabled by default via the **Manage System > Server** page.
   - If the Master has been previously configured for secured communication, click **OK** to accept the AMX SSL certificate (*if SSL is enabled*) and then enter a valid username and password into the fields within the *Login* dialog.
4. Click **OK** to enter the information and proceed to the Master's *Manage WebControl Connections* window.
5. The *Manage WebControl Connections* page (FIG. 30) is accessed by clicking on the *Manage connections* link within the Web Control section in the Navigation frame. Once activated, this page displays links to G4 panels running the latest G4 Web Control feature previously setup and activated on the panel.

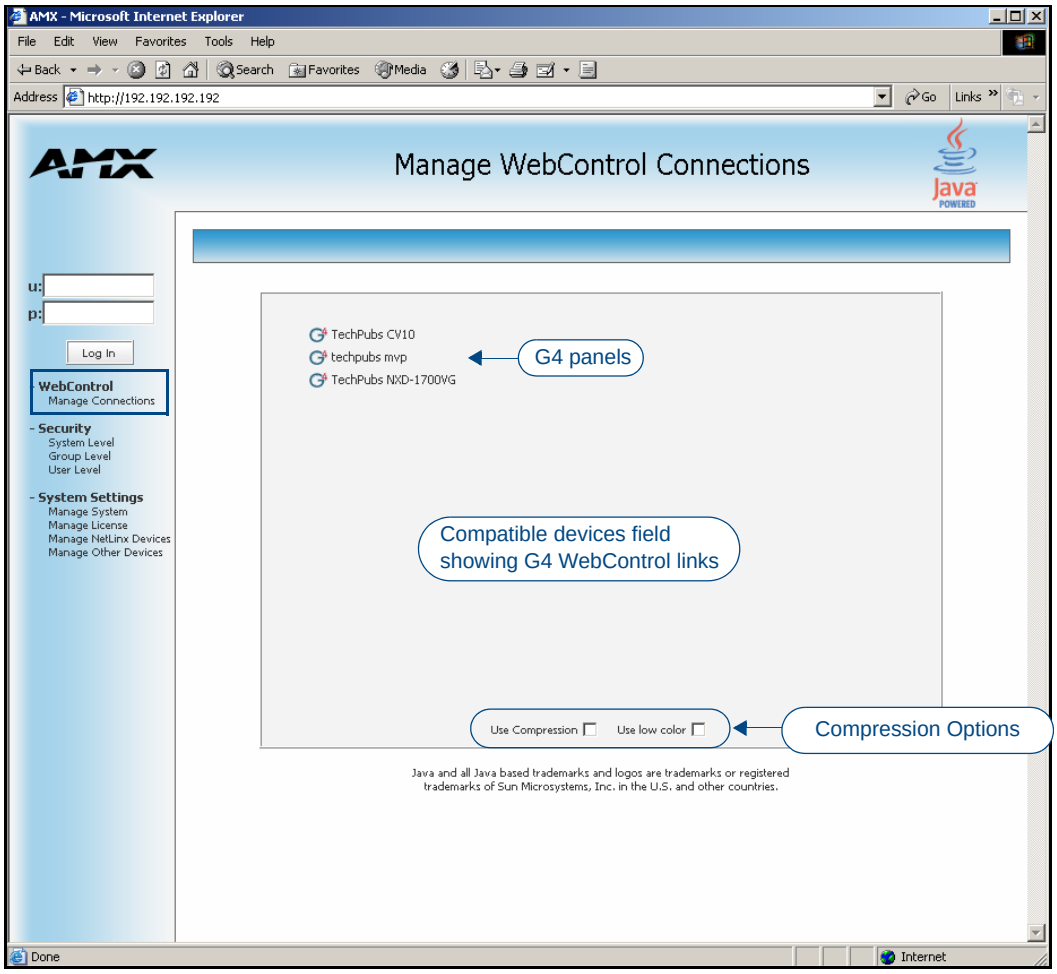

FIG. 30 Manage WebControl Connections page (populated with compatible panels)

6. Click on the G4 panel name link associated with the target panel. A secondary web browser window appears on the screen (FIG. 31).

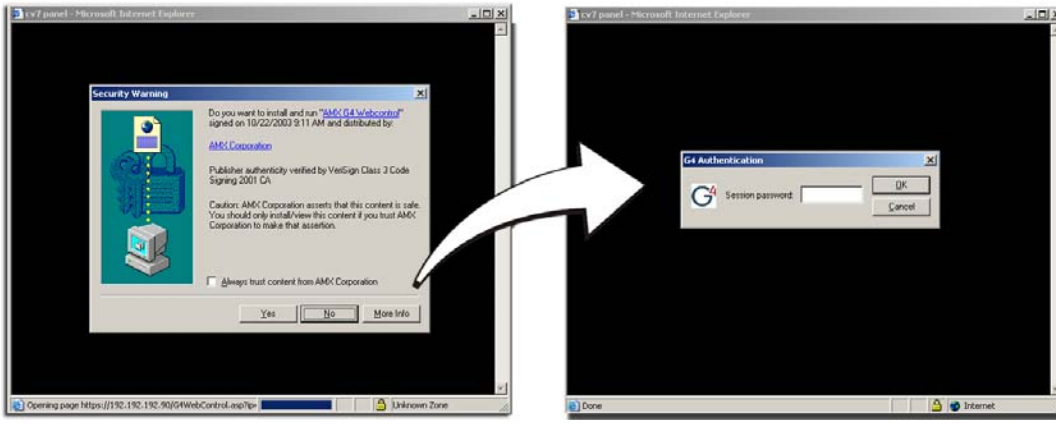

FIG. 31 Web Control VNC installation and Password entry screens

7. Click **Yes** from the Security Alert popup window to agree to the installation of the G4 WebControl application on your computer. This application contains the necessary Active X and VNC client applications necessary to view and control the panel pages from your computer.

NOTE

The G4 Web Control application is sent by the panel to the computer that is used for communication. Once the application is installed, this popup will no longer appear. This popup will only appear if connecting to the target panel using a different computer.

8. In some cases, a *Connection Details* dialog (FIG. 32) may appear that requests a VNC Server IP Address.

- This is the IP address of the target touch panel, not the IP of the Master.
- The IP address may be found in the System Settings page (for more information, please refer to the *System Settings Page* section on page 57).
- If this field does not appear, continue to step 9.

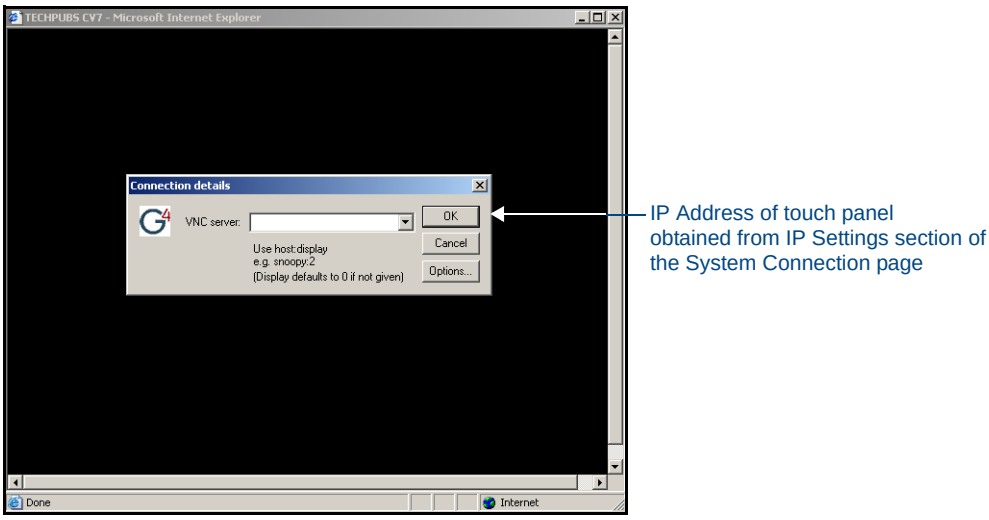

FIG. 32 Connection Details dialog

9. If a WebControl password was set up on the G4 WebControl page, a G4 Authentication Session password dialog box appears on the screen within the secondary browser window.

10. Enter the Web Control session password into the *Session Password* field (FIG. 31).

This password was previously entered into the Web Control Password field within the G4 Web Control page on the panel.

11. Click **OK** to send the password to the panel and begin the session.

A confirmation message appears stating *"Please wait, Initial screen loading."*.

The secondary window then shows the same G4 page being displayed on the target G4 panel.

A small circle appears within the on-screen G4 panel page and corresponds to the location of the mouse cursor. A left-mouse click on the computer-displayed panel page is the same as an actual touch on the target G4 panel page.

Upgrading Modero Firmware

Overview

Before beginning the Upgrade process:

- Set up and configure your NetLinx Master. Refer to the particular *NetLinx Master Instruction Manual* for detailed setup procedures.
- Calibrate and prepare the communication pages on the panel for use. Refer to the *Panel Calibration* section on page 21.
- Refer to the NetLinx Studio version 2.x or higher Help file for more information on uploading files.
- Configure the panel for a direct connection. Refer to the *Configuring Communication* section on page 23 for more information.

The process of updating firmware involves the use of a communicating NetLinx Master. The required steps for updating firmware to a Modero panel are virtually identical to those necessary for updating Kit files to a NetLinx Master, except the target device is a panel instead of a Master. Refer to either the Master's User Manual or Studio 2.x Help file for those procedures.

A touch panel which is not using a valid username and password will not be able to communicate with a secured Master. If you are updating the firmware on or through a panel which is not using a username or password field, you must first remove the Master Security feature to establish an unsecured connection.

Upgrading the Firmware via the USB port

Before beginning with this section, verify your panel is both powered and the Type-A USB connector is securely inserted into the PC's USB port.

The panel must be powered on before connecting the mini-USB connector to the panel.

Establishing a USB connection between the PC and the panel prior to installing the latest NetLinx Studio and TPDesign4 applications will cause a failure in the USB driver installation.
This driver must first be saved to the PC as part of the new NetLinx Studio and TPDesign4 application installations.

Step 1: Configure the panel for a USB Connection Type

1. After the installation of the USB driver has been completed, confirm the proper installation of the large Type-A USB connector to the PC's USB port and restart your machine.
2. After the NXD-500i panel powers-up, press and hold the grey **Front Setup Access** button for 4 seconds to continue with the setup process and proceed to the **Setup** page.
3. Select **Protected Setup** > **System Settings**, located on the lower-left, to open the *System Settings* page.
4. Insert the mini-USB connector into the Program Port on the panel.

   It may take a minute for the panel to detect the new connection and send a signal to the PC, indicated by a green *Connection Status* icon.

   If a few minutes have gone by and the *Connection Status* icon still does not turn green, complete the procedures in the following section to set up the Virtual Master and refresh the System from the Online Tree. This action sends out a request to the panel to respond and completes the communication, turning the *Connection Status* icon green.
5. Navigate back to the *System Status* page.

Step 2: Prepare NetLinx Studio for communication via the USB port

1. Launch NetLinx Studio (default location is **Start > Programs > AMX Control Disc > NetLinx Studio**).
2. Select **Settings > Master Communication Settings** from the Main menu to open the *Master Communication Settings* dialog (FIG. 33).

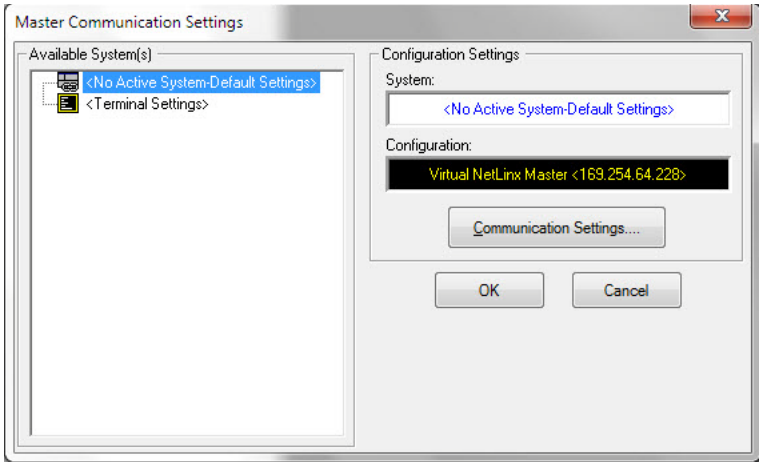

FIG. 33 Master Communication Settings dialog box

3. Click the **Communications Settings** button to open the *Communications Settings* dialog (FIG. 34).

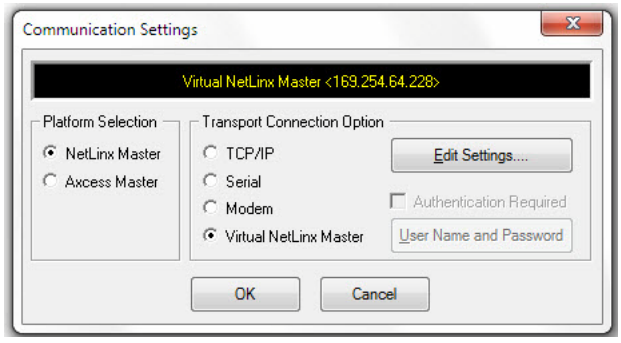

FIG. 34 Communication Settings dialog box

4. Click on the **NetLinx Master** radio button from the *Platform Selection* section to work as a NetLinx Master.
5. Click on the **Virtual Master** radio box from the *Transport Connection Option* section to configure the PC to communicate directly with a panel.

   Everything else, such as the Authentication, is greyed-out because the communication is not going through the Master's UI.
6. Click the **Edit Settings** button on the *Communications Settings* dialog to open the *Virtual NetLinx Master Settings* dialog (FIG. 33).

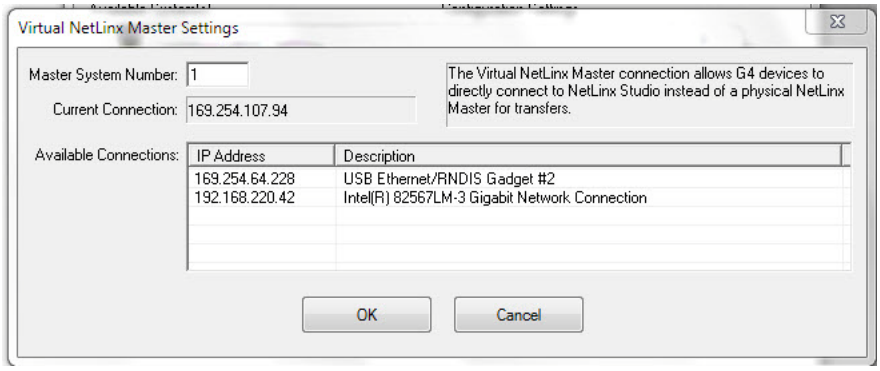

FIG. 35 Virtual NetLinx Master Settings dialog

7. Enter the System number (default is **1**).
8. Click **OK** three times to close the open dialogs, save the settings, and return to the main NetLinx Studio application.
9. Click the **OnLine Tree** tab in the Workspace window to view the devices on the Virtual System.
   The default System value is one.
10. Right-click on the *Empty Device Tree/System* entry and select **Refresh System** to re-populate the list.
    The panel will not appear as a device below the virtual system number in the Online Tree tab until both the system number used in step 7 for the Virtual NetLinx Master (VNM) is entered into the Master Connection section of the System Settings page.

NOTE

If the G4 panel does not appear, refer to the Troubleshooting section on page 129 *for more information.*

Step 3: Confirm and Upgrade the firmware via the USB port

Use the CC-USB Type-A to Mini-B 5-wire programming cable (**FG10-5965**) to provide communication between the mini-USB Program port on the touch panel and the PC. This method of communication is used to transfer firmware Kit files and TPD4 touch panel files.

NOTE

A mini-USB connection is only detected after it is installed onto an active panel. This allows the PC to detect the panel and assign an appropriate USB driver.

1. Verify that the direct USB connection (Type-A on the panel to mini-USB on the panel) is configured properly using the steps outlined in the previous two sections.
2. After the Communication Verification dialog window verifies active communication between the Virtual Master and the panel, click the **OnLine Tree** tab in the Workspace window (FIG. 36) to view the devices on the Virtual System.
   The default System value is one.
3. Right-click on the System entry (FIG. 36) and select **Refresh System** to re-populate the list.
   Verify the panel appears in the **OnLine Tree** tab of the Workspace window.
   The default Modero panel value is 0.

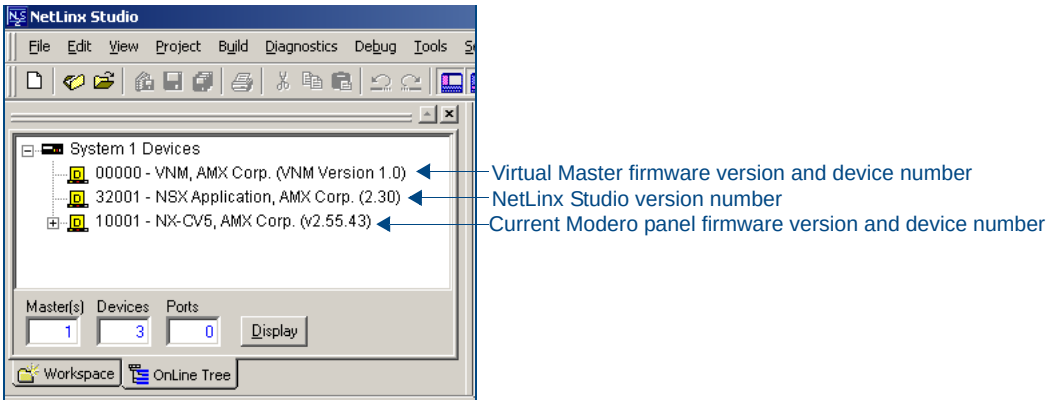
NetLinx Studio
File Edit View Project Build Diagnostics Debug Tools
System 1 Devices
00000 - VNM, AMX Corp. (VNM Version 1.0)
32001 - NSX Application, AMX Corp. (2.30)
10001 - NX-CV5, AMX Corp. (v2.55.43)
Master(s) Devices Ports
1 3 0
Display
Workspace
OnLine Tree
Virtual Master firmware version and device number
NetLinx Studio version number
Current Modero panel firmware version and device number

FIG. 36 NetLinx Workspace window (showing the panel connection via a Virtual NetLinx Master)

NOTE

The panel firmware is shown on the right of the listed panel.
*Download the latest firmware file from **www.amx.com** and then save the Kit file to your computer.*

4. If the panel firmware being used is not current, download the latest Kit file by first logging in to **www.amx.com** and then navigate to **Tech Center > Firmware Files** and from within the **Modero** section of the web page locate your Modero panel.
5. Click on the desired Kit file link and after you've accepted the Licensing Agreement, verify you have downloaded the Modero Kit file to a known location.
6. From within Studio, select **Tools > Firmware Transfers > Send to NetLinx Device** from the Main menu to open the Send to NetLinx Device dialog (**B** in FIG. 37).

   Verify the panel's System and Device number values match those values listed within the System folder in the **OnLine Tree** tab of the Workspace window (**A** in FIG. 37).

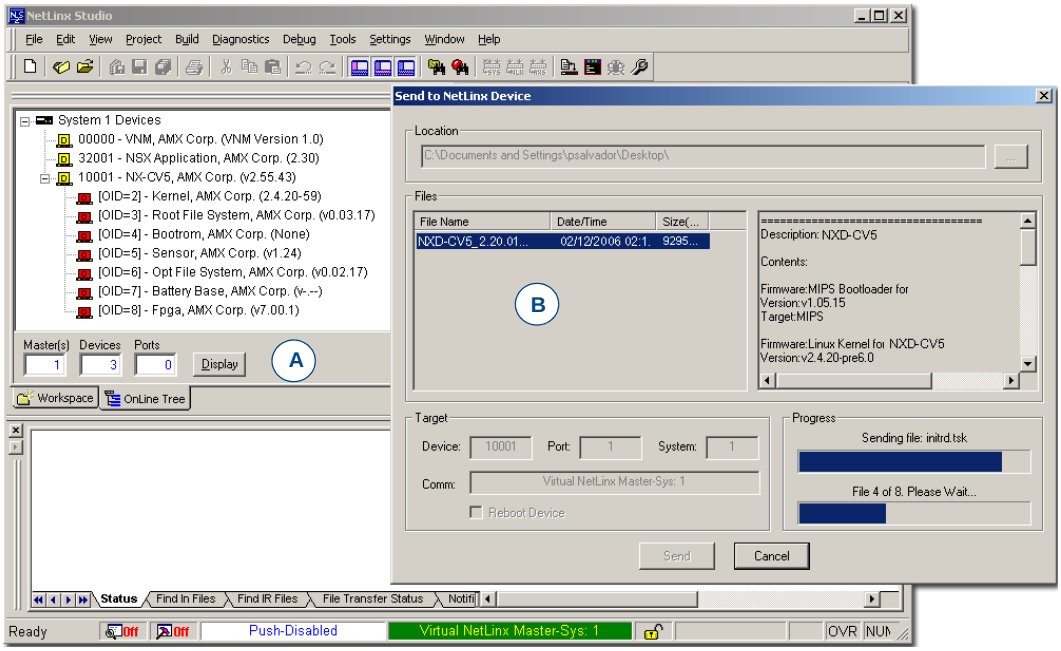

FIG. 37 Using USB for a Virtual Master transfer

7. Select the panel's Kit file from the **Files** section.
8. Enter the **Device** value associated with the panel and the **System** number associated with the Master listed in the *OnLine Tree* tab of the *Workspace* window.

   The *Port* field is greyed-out.

9. Click the **Reboot Device** checkbox.
   - This causes the touch panel to reboot after the firmware update process is complete.
   - The reboot of the panel can take up 30 seconds after the firmware process has finished.
10. Click **Send** to begin the transfer. The file transfer progress is indicated on the bottom-right of the dialog (**B** in FIG. 37).
11. As the panel is rebooting, temporarily unplug the USB connector on the panel until the panel has completely restarted.
12. Once the first panel page has been displayed, reconnect the USB connector to the panel.
13. Right-click the associated System number and select **Refresh System**.

    This causes a refresh of all project systems, establishes a new connection to the Master, and populates the System list with devices on your particular system.
14. Confirm that the panel has been properly updated to the correct firmware version.

Setup Pages and Descriptions

Overview

This section describes the *Setup* and *Protected Settings* pages and their specific functional elements.

Setup Navigation Buttons

The Setup Navigation Buttons (FIG. 38) appear on the left of the panel screen when the *Setup* page is currently active.

Press to access the **Protected Setup** page for panel calibration and to access security release passwords and connection settings.

Press to access the **Information** menu and select either **Project Information** or **Panel Information**.

Press to access the **Time & Date Settings** page to alter the time and date settings on the Master.

Press to access the **Audio Settings** page to alter the audio parameters on the Modero panel.

FIG. 38 Setup Navigation Buttons

Protected Setup

The *Protected Setup* button opens the *Protected Setup* page, which centers around the properties used by the panel to communicate with the NetLinx Master. Refer to both the *Protected Setup Navigation Buttons* section on page 54 and the *Protected Setup* section on page 47 for more detailed information.

Setup Page

The *Setup* page (FIG. 39) centers around basic Modero panel properties, such as the Connection Status of the panel, Display Timeout, Inactivity Page Flip Time, Inactivity page file, and the Panel Brightness.

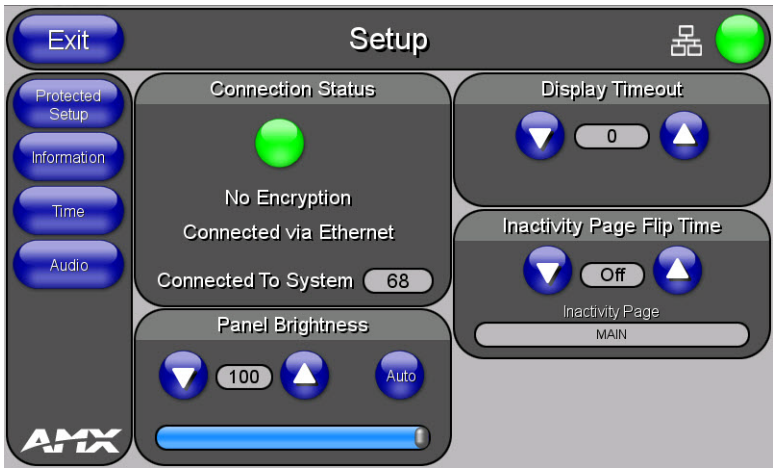

FIG. 39 Setup page

The elements of the Setup page are described below:

Setup Page	
Exit:	Returns to the Main touch panel page. In this case, the previous page is the default Main page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is Wired (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Connection Status:	Displays whether the panel is communicating externally, the encryption status of the communicating Master, what connection type is being used (*Ethernet or USB*), and of what System the panel is a part. This visual display of the connection status is also reflected at the upper-right of each firmware page. This allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • When a connection is established, the message displayed is either: "*Connected via Ethernet* " or "*Connected via USB* ". • If no connection can be established by the Modero panel, it will continue to try and establish a connection while displaying: "*Attempting via...*". • The word "*Encrypted*" appears only when an encrypted connection is established with a target Master. • The panel must be rebooted before incorporating any panel communication changes and detecting any active Ethernet connections. ***The Ethernet connection is only detected after the panel is rebooted.***
Display Timeout:	Sets the length of time the panel can remain idle before activating the sleep mode. When the device goes into sleep mode, the LCD is powered down. • Press the **UP/DN** buttons to increase/decrease the time until the panel times out. Range = 0 - 240 minutes. • Use this button to set the timeout value to zero and disable the sleep mode.
Inactivity Page Flip Time:	Sets the number of minutes of inactivity before the panel automatically flips to a pre-selected touch panel page. When the device goes into this inactivity mode, the LCD does not power down. • Press the UP/DN buttons to increase/decrease the time the panel can remain inactive before it flips to the preset page. Range = 0 - 240 minutes. • Use this button to set the timeout value to zero and disable the inactivity page flip mode. • The touch panel page used for the Inactivity page flip is shown within a small Inactivity Page field.
Panel Brightness:	Sets the display brightness level of the panel. • Press the UP/DN buttons to adjust the brightness level. Range = 0 - 100. • The on-screen bargraph can be dragged to adjust the Brightness level which is then reflected as a corresponding numeric value within the *Panel Brightness* field. • The **Auto Brightness** button, when selected, will cause the panel to dim as the light level decreases, in order to reflect the brightness level of the room. If the panel is touched, the backlight will temporarily brighten the panel more than the previously selected level.

Information

Pressing and holding the **Information** button provides a menu to select either the *Panel Information* page or the *Panel Information* page (FIG. 40). Select either option to access that page.

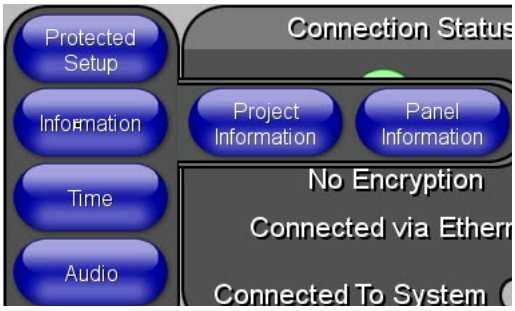

FIG. 40 Information menu

Panel Information Page

The Project Information page displays the TPDesign4 (TPD4) project file properties currently loaded on the selected Modero panel (FIG. 41). Refer to the *TPDesign4 Touch Panel Program* instruction manual for more specific information on uploading TPDesign4 files to a panel.

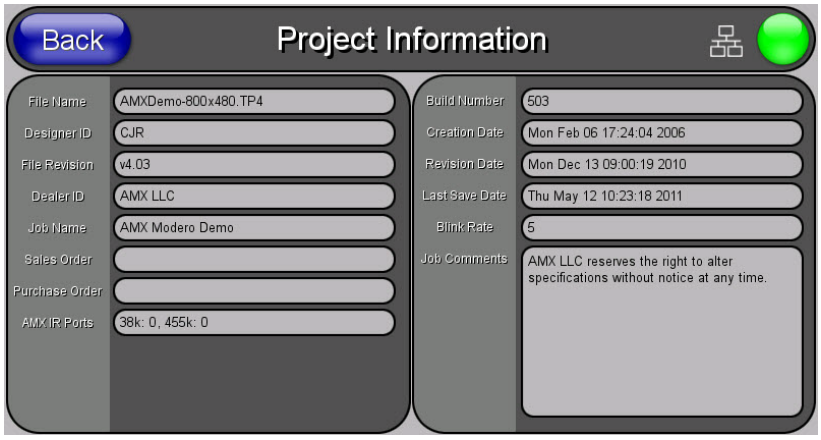

FIG. 41 Project Information page

The elements of the *Project Information* page are described in the table below:

Project Information Page	
Back:	Returns to the previously active touch panel page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is Wired (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
File Name:	Displays the name of the TPDesign4 project file downloaded to the panel.
Designer ID:	Displays the designer information.
File Revision:	Displays the revision number of the file.
Dealer ID:	Displays the dealer ID number (*unique to every dealer and entered in TPD4*).
Job Name:	Displays the job name.
Sales Order:	Displays the sales order information.
Purchase Order:	Displays the purchase order information.

Project Information Page (Cont.)	
AMX IR Ports:	Displays the AMX 38 kHz IR channel port used by the IR receiver on the panel. • This information is pulled by the panel from *AMX IR Receivers* section of the TPD4 Project Properties > IR Emitters & Receivers tab. • For IR reception, this is the port that reports a push on for the corresponding IR code. • IR receivers and transmitters on G4 panels share the device address number of the panel.
Build Number:	Displays the build number information of the TPD4 software used to create the project file.
Creation Date:	Displays the project creation date.
Revision Date:	Displays the last revision date for the project.
Last Save Date:	Displays the last date the project was saved.
Blink Rate:	Displays the feedback blink rate (10th of second).
Job Comments:	Displays any comments associated to the job. These comments are taken from the TPD4 project file.

Panel Information Page

The Panel Information page (FIG. 42) centers around Modero panel properties that include resolution used, on-board memory, firmware, address/channel information, and string information.

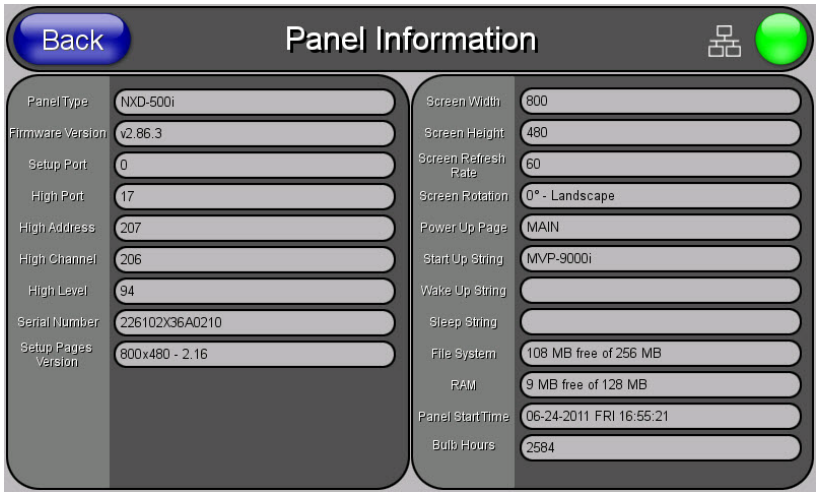

FIG. 42 Panel Information page

The elements of the *Panel Information* page are as follows:

Panel Information Page	
Back:	Returns to the previously active touch panel page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is Wired (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status, regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master requiring a username and password.
Panel Type:	Displays the model of the Modero panel being used.
Firmware Version:	Displays the G4 firmware version being used by the panel. • Verify that the panel has the latest version from **www.amx.com**.
Setup Port:	Displays the setup port information/value being used by the panel.
High Port:	Displays the high port (port count) value for the panel.
High Address:	Displays the high address (address count) value for the panel.

Panel Information Page (Cont.)	
High Channel:	Displays the high channel (channel count) value for the panel.
High Level:	Displays the high level (level count) value being used by the panel.
Serial Number:	Displays the specific serial number value assigned to the panel.
Setup Pages Version:	Displays the type and version of the Setup pages being used by the panel.
Screen Width:	Displays the pixel width being used to display the incoming signal on the Modero panel. • The maximum available screen width on a NXD-500i panel is 800 pixels.
Screen Height:	Displays the pixel height being used to display the incoming signal on the Modero panel. • The maximum available screen height on a NXD-500i panel is 480 pixels.
Screen Refresh Rate:	Displays the refresh rate applied to the incoming signal from the panel. *Default rate is 60.*
Screen Rotation:	Displays the degree of rotation applied to the on-screen image.
Power Up Pages:	Displays the first touch panel page assigned for display after the device is powered-up. • This information is taken from the TPD4 project file. • Most projects begin with a Main page.
Start Up String:	Displays the start-up string.
Wake Up String:	Displays the wake up string used after an activation from a timeout.
Sleep String:	Displays the sleep string used during a panel's sleep mode.
File System:	Displays the amount of Flash memory available on the Modero panel.
RAM:	Displays the available RAM (or Extended Memory module) on the Modero panel.
Panel Start Time:	Displays the last time the panel booted.
Bulb Hours:	Displays the total time that the panel has been at full brightness.

Time & Date Settings Page

The *Time & Date Settings* page (FIG. 43) allows setting and alteration of the time and date information on the NetLinx Master.

If either the Time or Date is modified on this page and then updated to the Master by pressing the **Set Time** button, all devices communicating to that target Master will then be updated to reflect the new information.

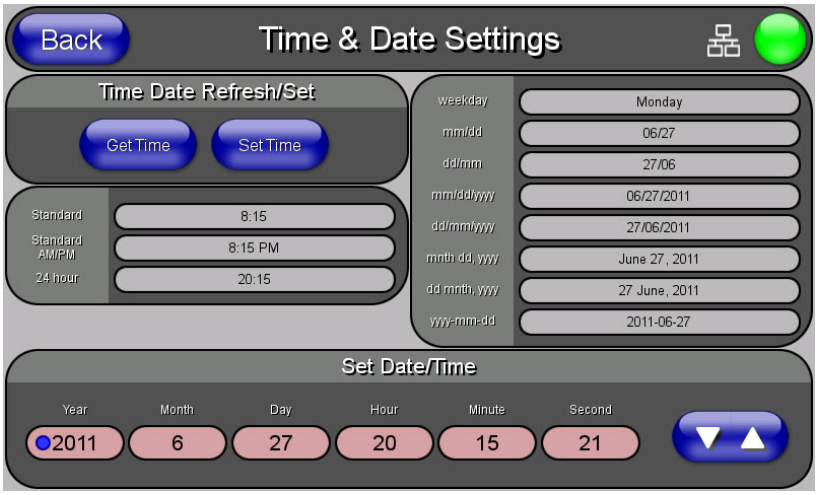

FIG. 43 Time and Date Settings page

NOTE

The only way to modify a panel's time, without altering the Master, is through NetLinx code.

The elements of the *Time & Date Settings* page are as follows:

Time & Date Settings Page	
Back:	Returns to the previously active touch panel page without saving changes.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is Wired (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Time Date Refresh/Set:	This section provides two options: • The **Get Time/Date** button retrieves the Time and Date information from the Master. • The **Set Time/Date** button sets the Master to retain and save any time/date modifications made on the *Time & Date Setup* page.
Time Display fields:	• These fields display the time in three formats: STANDARD, STANDARD AM/PM, and 24 HOUR.
Date Display fields:	• These fields display the calendar date information in several different formats.
Set Date/Time:	This section provides a user with both UP/DN arrow buttons to alter the Master's calendar date and time. The blue circle indicates which field is currently selected. • Select the **Year** field and use the UP/DN buttons to alter the year value (range = 2000 - 2037). • Select the **Month** field and use the UP/DN buttons to alter the month value (range = 1 - 12). • Select the **Day** field and use the UP/DN buttons to alter the day value (range = 1 - 31). • Select the **Hour** field and use the UP/DN buttons to alter the hour value (24-hour military). • Select the **Minute** field and use the UP/DN buttons to alter the minute value (range = 0 - 59). • Select the **Second** field and use the UP/DN buttons to alter the second value (range = 0 - 59).

NOTE

NXD-500i touch panels do not have an onboard clock. This page both receives and sets the time and date of the NetLinx Master.

Audio Settings Page

The *Audio Settings* page (FIG. 44), accessed by pressing the **Audio** button on the *Setup* page, allows adjustment of the master volume parameters and default panel sounds on the panel.

FIG. 44 Audio Settings page

The elements of the Audio Settings page are as follows:

Audio Settings Page	
Back:	Saves the changes and returns to the previously active touch panel page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status, regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master, requiring a username and password.
Default Panel Sounds:	Sets the panel to play various sounds. • Activating the **Button Hit** button plays a default sound when touching an active button. • Activating the **Button Miss** button plays a default sound when touching a non-active button or any area outside of the active button. • The **Play Test Sound** button plays a test WAV/MP3 file over the panel's internal speakers.
Intercom Mic Level:	Allows adjustment of the current Microphone volume level being received from the intercom. • Use the *UP/DN* buttons to adjust the Microphone volume level (range = 0 - 100). • The Mic Out Level bargraph indicates the current Mic Out level.
Internal Sound Level:	This section allows you to adjust the current sound level on the internal panel speaker: • Use the *UP/DN* buttons to adjust the volume output on the internal speakers (range = 0 - 100). • The *Internal Sound Level* bargraph indicates the current sound level. • The Mute button mutes the volume.
Intercom Volume:	This section allows alteration of the current intercom volume level: • Use the *UP/DN* buttons to adjust the volume level (range = 0 - 100). • The *Master Volume* bargraph indicates the current volume level. • The Mute button toggles the *Mute* feature.

Supported sampling rates for WAV

The following is a listing of supported sampling rates associated for WAV files played on a NXD-500i panel. Some WAV files currently played on other Modero panels may not work on a NXD-500i. The supported sampling rates for WAV files are:

Supported WAV Sampling Rates	
• 48000 Hz	• 16000 Hz
• 44100 Hz	• 12000 Hz
• 32000 Hz	• 11025 Hz
• 24000 Hz	• 8000 Hz
• 22050 Hz	

Protected Setup Navigation Buttons

The **Protected Setup** navigation buttons (FIG. 45) appear on the left of the panel screen when the *Protected Setup* page is currently active.

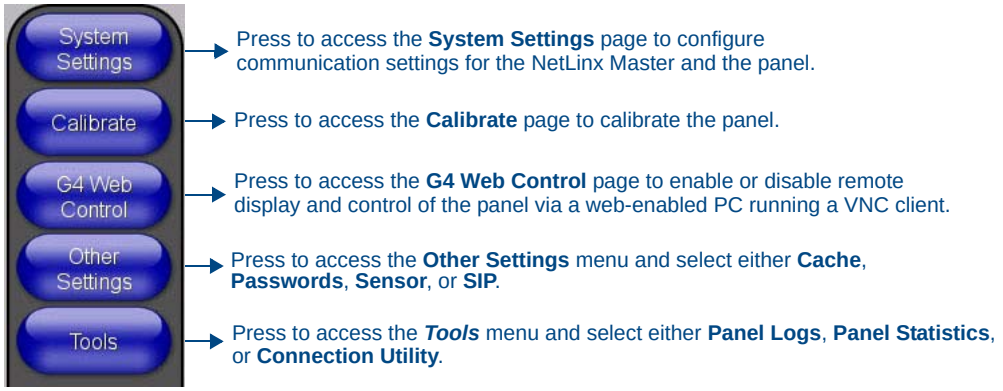
System Settings
Calibrate
G4 Web Control
Other Settings
Tools
Press to access the System Settings page to configure communication settings for the NetLinx Master and the panel.
Press to access the Calibrate page to calibrate the panel.
Press to access the G4 Web Control page to enable or disable remote display and control of the panel via a web-enabled PC running a VNC client.
Press to access the Other Settings menu and select either Cache, Passwords, Sensor, or SIP.
Press to access the Tools menu and select either Panel Logs, Panel Statistics, or Connection Utility.

FIG. 45 Protected Setup Navigation Buttons

Protected Setup Page

The *Protected Setup* page (FIG. 46) centers around the properties used by the panel for proper communication with the NetLinx Master. Enter the factory default password (***1988***) into the password keypad to access this page.

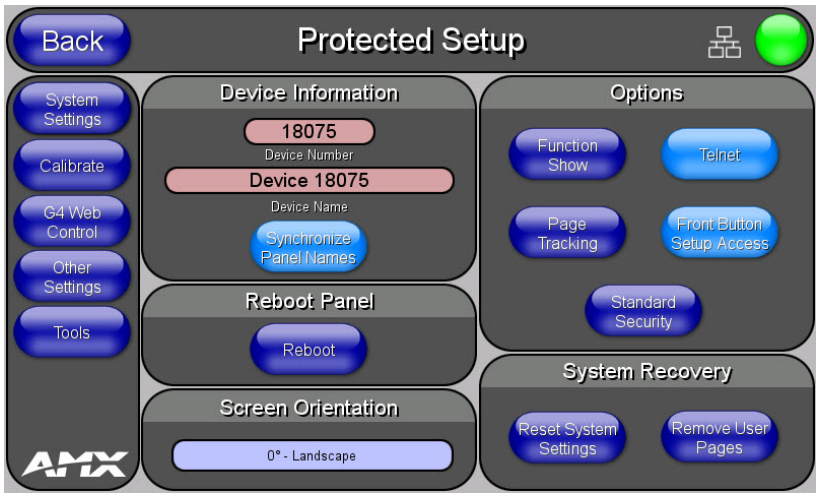

FIG. 46 Protected Setup page-showing default values

The elements of the *Protected Setup* page are described in the table below:

Protected Setup Page	
Back:	Saves the changes and returns to the previously active touch panel page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master, requiring a username and password.
Device ID:	• **Number:** Opens a keypad that is used to set and display the current device number. • **Name:** Opens a keypad that is used to set and display the current device name.

Protected Setup Page (Cont.)	
Options:	Allows selection of various touch panel features: • The **Function Show** button enables the display of the channel port and channel code in the top left corner of the button, the level port and level code in the bottom left corner, and the address port and address code in the bottom right corner (see FIG. 48 for an example of the function locations). • Use the **Page Tracking** button to toggle page tracking. When enabled, the touch panel sends page data back to the NetLinx Master, or vice versa depending on the touch panel settings. • Use the **Telnet** button to enable or disable the telnet server on the panel. This feature focuses on direct telnet communication to the panel. • Use the **Front Button Setup Access** button to activate the grey **Front Setup Access** button (located below the LCD) to access the firmware pages. - Default condition is On. - Press and hold this grey button for **3 seconds** to access the *Setup* page. - Press and hold this grey button for **6 seconds** to access the *Calibration* page. • Use the Security button to display one of three security settings: *Standard*, *Secure*, and *DoD*. Pressing this button opens a popup window allowing changes to the Security Profile. ***Note**: Refer to the Security Settings* section on page 56 *for important information on using this feature.*
System Recovery:	Either resets the touch panel to factory default settings and/or wipes out all existing touch panel pages: • The **Reset System Settings** button allows a user to wipe out all current configuration parameters on the touch panel (such as IP Addresses, Device Number assignments, Passwords, and other presets). - Pressing this button launches a Confirmation dialog (FIG. 47) which asks you to confirm your selection. - This dialog is configured with a delay timer that does not enable the YES button for 5 seconds. This delay provides an additional amount of time for the user to confirm their decision. • The **Remove User Pages** button allows the removal of all current TPD4 touch panel pages currently on the panel (*including the pre-installed AMX Demo pages*). - Pressing this button launches a Confirmation dialog (FIG. 47) which asks to confirm your selection. - This dialog is configured with a delay timer that does not enable the YES button for 5 seconds. This delay provides an additional amount of time for the user to confirm their decision.
Reboot/Shutdown Panel:	**Reboot:** Pressing this button causes the panel to restart after saving any changes. **Shutdown:** Pressing this button causes the panel to shut down after saving any changes.

This dialog has a wait time of 5 seconds before the YES option is enabled.

FIG. 47 Protected Setup page-System Recovery confirmation dialog

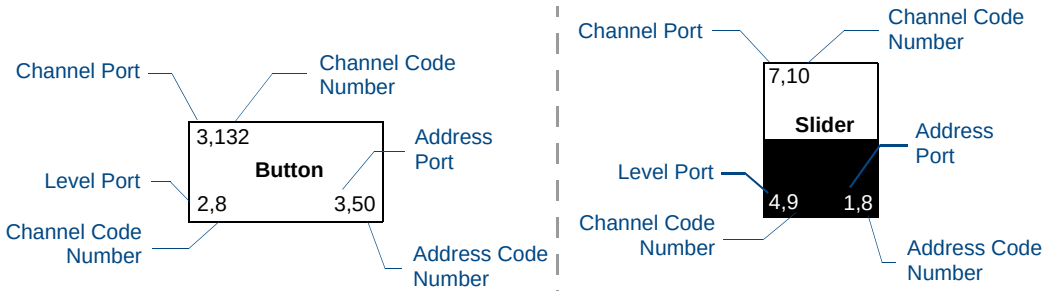

FIG. 48 Button/slider Function Show example

Security Settings

The **Security** button on the *Protected Setup* page has three settings: *Standard*, *Secure*, and *DoD*. Pressing the button opens the *Panel Security Setting* popup window (FIG. 49)

Panel Security Setting
Changing the security setting may change the panel's password. In addition, some internal server ports may be closed. A reboot is required for all changes to take effect.
Please refer to product documentation for a complete list of changes.
Standard
Secure
DoD
Cancel
Apply

FIG. 49 Panel Security Setting popup window

Each of the settings has different features for touch panel security:

Security Profile Features	
Standard:	• Factory default, shipped in this configuration. • Default Protected Setup Password is "*1988*". • Remote login uses Telnet.
Secure:	• Default Protected Setup Password is "Amx1234!". • Minimum password requirement is 8 characters with at least one numeric character. • Remote login uses SSH. • Remote login user name is "*amx*". • Login failure attempt pauses 4 seconds before another login attempt is allowed. • After 3 consecutive unsuccessful SSH login attempts, login lockout is enabled for 15 minutes. • Login and logout audit logging is enabled.
DoD:	• Default Protected Setup Password is "*Amx1234!*". • Minimum password requirement is 8 characters with at least one numeric character, one uppercase character, one lower case character, and one special character, with no duplicate adjacent characters. • Remote login uses SSH. • Remote login user name is "*amx*". • Login failure attempt pauses 4 seconds before another login attempt is allowed. • After 3 consecutive unsuccessful SSH login attempts, login lockout is enabled for 15 minutes. • Login and logout audit logging is enabled. • DoD login banner is enabled.

NOTE

A transition from one security mode to another will reset the Protected/Web Control/ remote login password to the default value for the current security mode (please refer to the default passwords above). A transition to Secure or DoD mode will disable G4 Web Control. Although the security password features are immediate, a reboot must occur for all the new security mode features to fully take effect.

For more information on configuring AMX devices for a secure environment, please refer to the guide *Security Profiles: Configuring AMX Devices For Installation Into a Secure Environment*, available at **www.amx.com**.

System Settings Page

The System Settings page (FIG. 50) sets the Secondary DNS Address information with its corresponding IP communication parameters, NetLinx Master communication settings, and reads the device number assigned to the Modero panel.

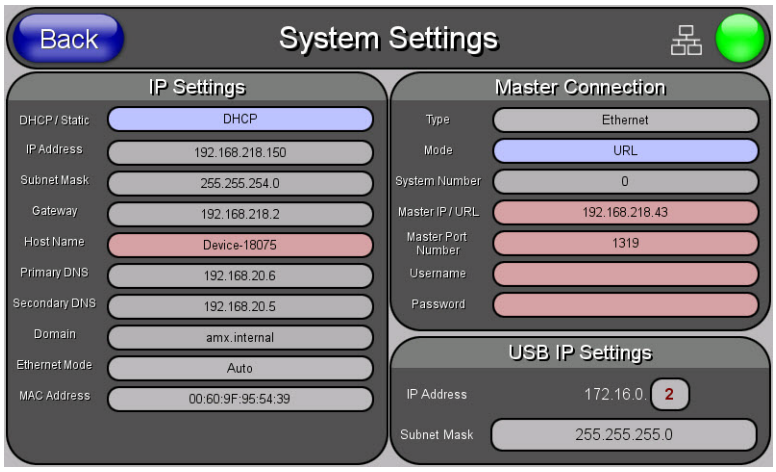

FIG. 50 System Settings page)

The elements of the *System Settings* page are as follows:

System Settings Page	
Back:	Saves the changes and returns to the previously active touch panel page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status, regardless of what page is currently active. A Lock only appears on the icon if the panel has established a connection with a currently secured target Master, which requires a username and password.
IP Settings:	
DHCP/Static:	Sets the panel to either DHCP or Static communication modes. • *DHCP (Dynamic Host Configuration Protocol)* assigns IP Addresses from client stations logging onto a TCP/IP network via a DHCP server. • *Static IP* is a permanent IP Address that is assigned to a node in a TCP/IP network.
IP Address:	Sets the secondary IP Address assigned to the panel.
Subnet Mask:	Sets a subnetwork address to the panel. *Subnetwork mask* is the technique used by the IP protocol to filter messages into a particular network segment (Subnet).
Gateway:	Sets a gateway value to the panel. *Gateway* is a computer that either performs protocol conversion between different types of networks/applications or acts as a go-between two or more networks that use the same protocols.
Host Name:	Sets the host name of the panel.

System Settings Page (Cont.)	
IP Settings: (Cont.)	
Primary DNS:	Sets the address of the primary DNS server used for host name lookups. • *DNS (Domain Name System)* is software that lets users locate computers on a local network or the Internet (TCP/IP network) by host and domain. The DNS server maintains a database of host names for its domain and their corresponding IP Addresses.
Secondary DNS:	Sets a secondary DNS value to the panel.
Domain:	Sets the unique name on the Internet to the panel for DNS look-up. • The panel belongs to the DNS domain.
Ethernet Mode:	Sets the speed of the Ethernet connection to the panel. • Choices are: **Auto**, **10 Half Duplex**, **10 Full Duplex**, **100 Half Duplex,** or **100 Full Duplex.**
MAC Address:	Displays a read-only field that is factory set by AMX for the built-in Ethernet interface.
Master Connection:	Sets the NetLinx Master communication values:
Type:	Sets the NetLinx Master to communicate with the panel via either USB or Ethernet. This is based on the cable connection from the rear. The Type field is read-only and cannot be set. ***ICSNet is not a supported option on this panel.*** • *Ethernet* is a CAT-5 cable (10/100Base T terminated in an RJ-45 connector) used to network computers together and is used in most LAN (local area networks). This description is also used to refer to both wired and wireless communication. • *USB* is a connection through the mini-USB port to a host computer.
Mode:	Cycles between the different connection modes (URL, Listen, and Auto) ***(ETHERNET Only - disabled when USB is selected)*** • **URL** - In this mode, enter the IP/URL, Master Port Number, and username/password (if used) on the Master. - The System Number field is read-only because the panel obtains this information from the communicating Master. • **Listen** - In this mode, add the Modero panel address into the URL List in NetLinx Studio and set the connection mode to Listen. This mode allows the Modero touch panel to "listen" for the Master's communication signals. - The System Number and Master IP/URL fields are red-only. • **Auto** - In this mode, enter the System Number and a username/password (if applicable). This mode is used when both the panel and the NetLinx Master are on the same Subnet and the Master has its UDP feature enabled. - Master IP/URL field is read-only.
System Number:	Allows you to enter a system number. Default value is 0 (zero). ***(ETHERNET Only - disabled when USB is selected)***
Master IP/URL:	Sets the Master IP or URL of the NetLinx Master. ***(ETHERNET Only - disabled when USB is selected)***
Master Port Number:	Enters the port number used with the NetLinx Master. • Default value is 1319. ***(ETHERNET Only - disabled when USB is selected)***
Username/Password:	If the target Master has been previously secured, enter the alphanumeric string (into each field) assigned to a pre-configured user profile on the Master. This profile should have the pre-defined level of access/configuration rights.
USB IP Settings:	Sets IP settings through the mini-USB port.
DHCP/Static:	Switches between HDHCP and Static connections.
IP Address:	The IP address of the device

Calibrate Page

The *Calibrate* page (FIG. 51) allows you to calibrate the touch panel for maximum sensitivity.

- Press and hold the **Front Setup Access** button for 6 seconds to access the *Calibrate* page.
- Press the crosshairs to calibrate the panel and return to the last active firmware page.

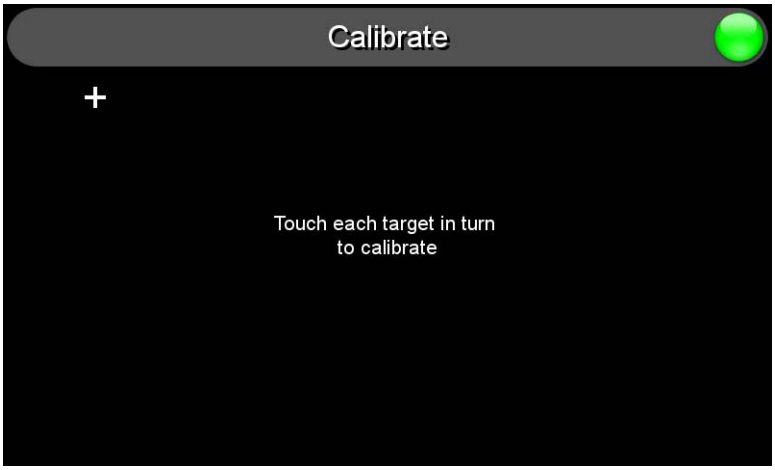

FIG. 51 Calibrate page

NOTE

If the calibration was improperly set and the Calibrate page cannot be reached through the panel's firmware, *this firmware page may be accessed via G4 Web Control. Navigate to the Protected Setup page and press the Calibrate button through the VNC window.*
This action causes the panel to go to the Calibrate *page seen above, where the touch panel may be physically re-calibrated again using the above procedures.*

G4 Web Control Settings Page

The *G4 Web Control Settings* page (FIG. 52) centers around enabling and disabling both the display and control of your panel (via the web). An external PC running a VNC client, installed during the initial communication to the G4 panel, makes this possible.

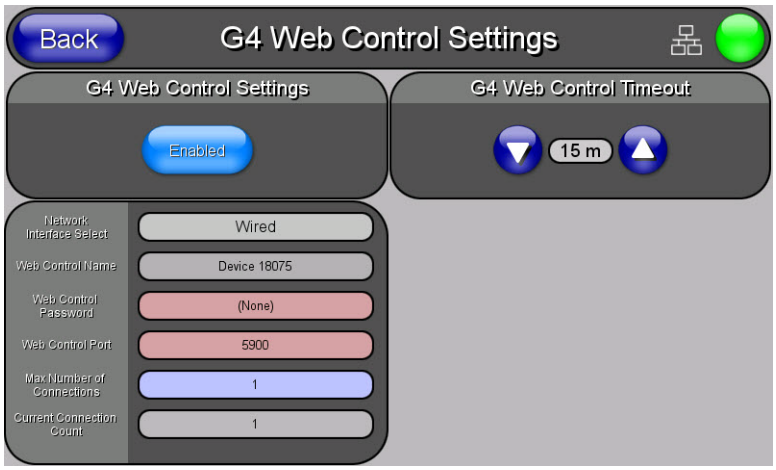

FIG. 52 G4 Web Control page

Each panel supports the open standard Virtual Network Computing (VNC) interface.

These panels contain a VNC server that allows them to accept a connection from any other device running a VNC client.

Once a connection is established to that target device, the client can control the touch panel remotely.

G4 Web Control Settings Page	
Back:	Saves the changes and returns to the previously active touch panel page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
G4 Web Control Settings:	Sets the IP communication values for the touch panel and contains:
Enable/Enabled:	• The Enable/Enabled button allows you to toggle between the two G4 activation settings: - **Enable** - deactivates the G4 Web Control feature on the panel. - **Enabled** - activates the G4 Web Control feature on the panel and allows an external PC running a VNC client to access the panel after the remaining fields are configured.
Network Interface Select:	Displays the detected method of communication to the web: • **Wired** is used when a direct Ethernet connection is being used for communication to the web. *This is a default setting.*
Web Control Name:	Allows entry of a unique alphanumeric string used as the display name of the panel within the *Manage WebControl Connections* window of the new NetLinx Security browser window. • This Web Control tab displays a G4 icon alongside the link to the Web Control Name given to this panel (FIG. 53).
Web Control Password:	Allows entry of the G4 Authentication session password associated for VNC web access of this panel.
Web Control Port:	Allows entry of the VNC Web Server's port value. • Default value is 5900.
Maximum Number of Connections:	This read-only field displays the maximum number of users that can be simultaneously connected to the target panel via the Web. • Default value is 1.
Current Connection Count:	This read-only field displays the current number of users connected to the target panel via the Web. *This value cannot exceed the Maximum number field.*
G4 Web Control Timeout:	Sets the length of time (in minutes) the panel can remain idle (no cursor movements) before the session is closed and the user is disconnected. • Minimum value = 0 minutes (panel never times-out) • Maximum value = 240 minutes (panel times-out after 240 minutes/4hours)

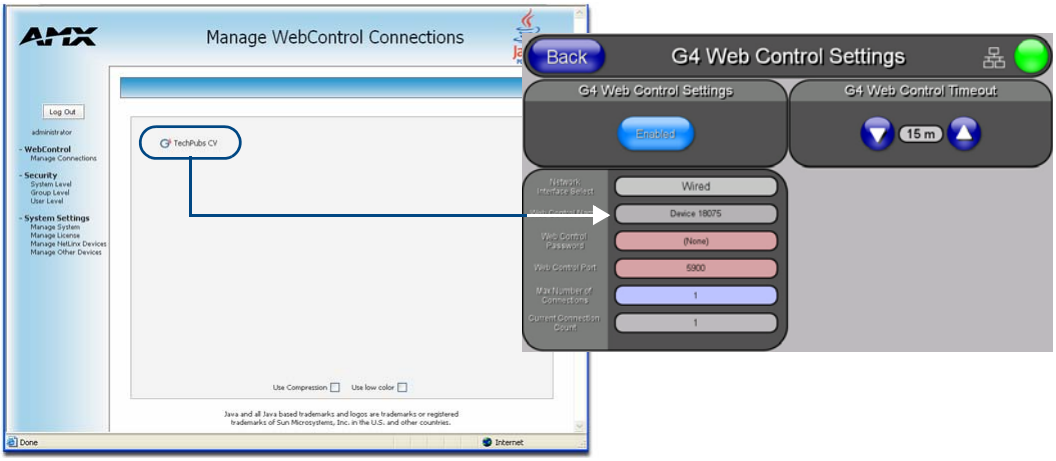

FIG. 53 Sample relationship between G4 Web Control and Manage WebControl Connections window

Refer to the *Using G4 Web Control to Interact with a G4 Panel* section on page 35 for more detailed instructions on how to use the G4 Web Control page with the new web-based NetLinx Security application.

Other Settings

Holding down the **Other Settings** button provides a menu to select the *Image Caching* page, the *Password Settings* page, the *Sensor Settings* page, or the *SIP Settings* page (FIG. 54). Select either option to access that page.

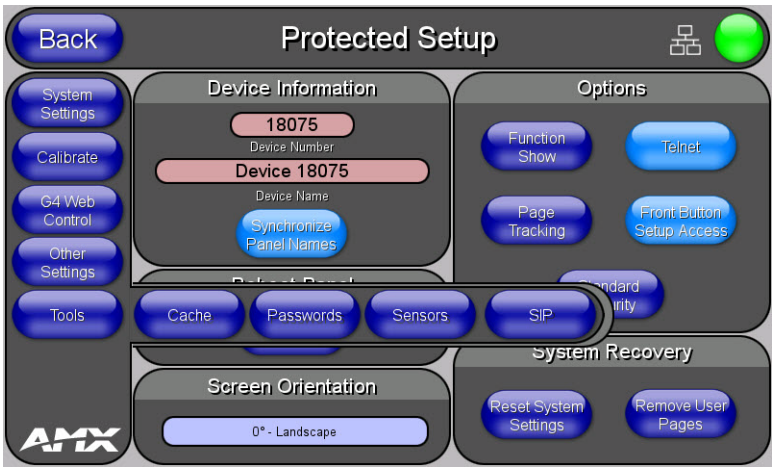

FIG. 54 Other Settings popup menu

Cache Settings Page

The *Cache Settings* page (FIG. 55) configures the allocation of memory for image caching.

The G4 graphics engine caches images to decrease load time of previously viewed images. RAM caching is always enabled, and both static and dynamic images are stored in the RAM cache as they are viewed.

The size of RAM cache is automatically configured to take into account available memory versus memory that may be needed by the panel later. As the RAM cache approaches its maximum size, the oldest items in the cache may be discarded to make room for newer items.

If Flash caching is enabled, dynamic images that would have been discarded will actually be moved to Flash, since retrieving images on Flash is typically faster than across a network, although it is slower than using a RAM cache.

Note that since static images are already stored on Flash, they are never moved to the Flash cache, so Flash caching applies only to dynamic images. Images in Flash cache are moved back to RAM cache the next time they are viewed.

As the Flash cache approaches its maximum size, the least recently used items may be discarded to make room for new items.

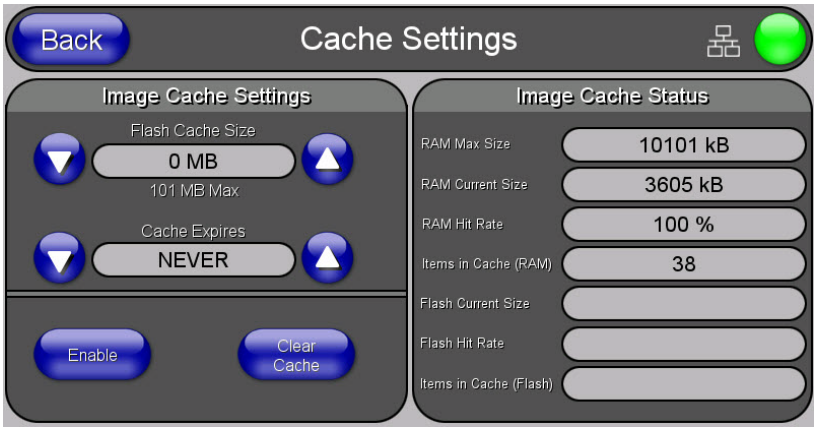

FIG. 55 Cache Settings Page

The elements of this page are as follows:

Cache Settings Page	
Back:	Saves all changes and returns to the previous page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master. • Bright red - disconnected • Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green. • Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received. ***Note**: a Lock appears on the icon if the panel is connected to a secured NetLinx Master.*
Image Cache Settings:	Allocates Flash memory for image caching.
Flash Cache Size	Press the Up and Down arrows to add and remove flash memory. Flash memory allocation cannot exceed the amount of Flash memory on the panel.
Flash/RAM Cache Expires	Press the Up and Down arrows to change the amount of time the images stay in cache memory. The options are: • Never • 2 Hours • 8 Hours • 1 Day • 2 Days • 5 Days
Enable:	Press this button to toggle the image Flash cache option On and Off.
Clear Cache:	Press this button to clear both the Flash and RAM cache of all stored images.
Image Cache Status:	The status of the memory available versus in use.
RAM Max Size	The maximum amount of memory available for all image caching.
RAM Current Size	The memory currently in use for caching static and dynamic images.
RAM Hit Rate	The percentage of image requests (static and dynamic) satisfied by accessing the cache. • 100 * (# of cache hits) / (# of cache hits + # of cache misses) • # of cache hits - the number of times an image was requested that the image was found in the cache • # of cache misses - the number of times an image was requested that the image could not be found in the cache, and the image had to either be loaded from flash or obtained via the network (for dynamic images). It is considered a RAM Cache Miss even if the image is subsequently found in flash cache.
Items in Cache (RAM)	The number of images that are currently stored in the RAM cache.
Flash Current Size	The maximum flash space allocated for image caching. Flash space is used for caching only when there is not enough available memory in the RAM cache for a newly requested image (it is used only for dynamic images).
Flash Hit Rate	The percentage of image requests (dynamic only) that are satisfied by accessing the flash cache. • 100 * (# of flash cache hits) / (# of flash cache hits + # of flash cache misses) • # of flash cache hits - # of times a dynamic image could not be found in RAM cache but was found in flash cache • # of flash cache misses - # of times a dynamic image could not be found in either RAM or flash cache. RAM cache hits are not relevant in this calculation.
Items in Cache (Flash)	The number of images that are currently stored in the Flash cache.

Setting the image cache

In the *Protected Setup* page:

1. Press the **Cache** button in the Other Settings popup menu. This opens the *Cache Settings* page.
2. Set the cache expiration in the field *Flash/RAM Cache Expires*. The Up and Down arrows increment through the available time frames.
3. Press the **Enable** button to turn on image caching. The button is illuminated when enabled.

Flash memory may be allocated for image caching, but RAM cache is always enabled.

Select the **Up** and **Down** arrows for the field *Flash Cache Size* to increase or reduce the amount of Flash memory used; the maximum amount of flash that can be allocated for caching is 75% of available flash.

Clearing the image cache

In the *Protected Setup* page:

1. Press the **Cache** button in the Other Settings popup menu. This opens the *Cache Settings* page.
2. Press **Clear Cache**. This clears all image cache currently stored on the panel (both Flash and RAM).

Checking image cache status

In the *Protected Setup* page:

1. Press the **Cache** button in the Other Settings popup menu. This opens the *Cache Settings* page. All status information is located in the *Image Cache Status* section of the page.

Password Settings Page

The options on the *Password Settings* page allow you to assign the passwords required for users to access the *Protected Setup* page (FIG. 56).

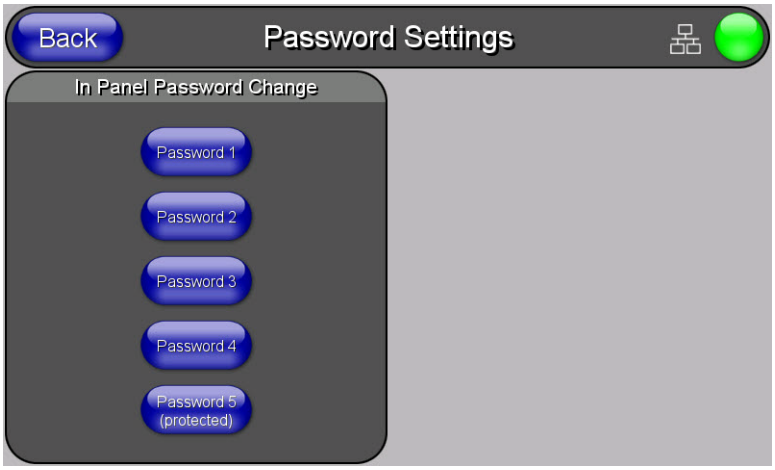

FIG. 56 Password Settings page

Features on this page include:

Password Settings Page	
Back:	Saves all changes and returns to the previous page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master. • Bright red - disconnected • Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green. • Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received. ***Note**: a Lock appears on the icon if the panel is connected to a secured NetLinx Master.*

Password Settings Page (Cont.)	
In Panel Password Change:	Accesses the alphanumeric values associated to particular password sets. The PASSWORD 1, 2, 3, 4 and 5 (protected) buttons open a keyboard to enter alpha-numeric values associated to the selected password group. ***Note**: Clearing Password #5 removes the need to enter a password before accessing the Protected Setup page.*

Sensor Settings

The *Sensor Settings* page (FIG. 57) allows adjustment of the Light and Motion Sensor parameters on a Modero touch panel.

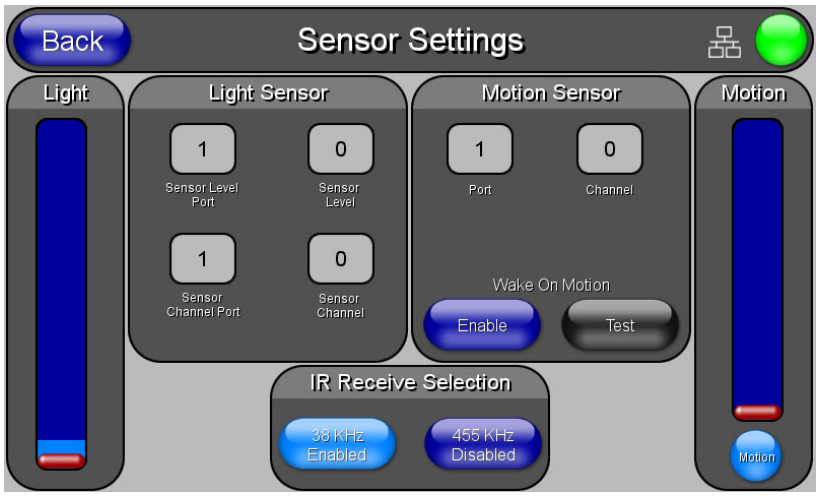

FIG. 57 Sensor Settings page

The elements of the *Sensor Settings* page are described in the table below:

Sensor Settings Page	
Back:	Saves the changes and returns you to the previously active touch panel page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of the page that is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master requiring a username and password.
Light:	The Light bargraph displays a vertical bargraph indicating the light level detected by the on-board photo-sensor.
Light Sensor:	Allows the user to review the Modero panel light sensor port and channel settings: • The **Sensor Level** field indicates the level used to report the light sensor level back to the NetLinx Master (set in TPD4) ***(read-only).*** • The **Sensor Level Port** field indicates the port used to report the light sensor level back to the NetLinx Master (set in TPD4) ***(read-only).*** • The **Sensor Channel** field indicates the level used to report the sensor channel back to the NetLinx Master (set in TPD4). It is On when below the Light Sensor threshold level ***(read-only)***. • The **Sensor Channel Port** field indicates the port used to report the sensor channel back to the NetLinx Master (set in TPD4) ***(read-only).***

Sensor Settings (Cont.)	
Motion Sensor:	Provides the following fields: • The **Motion Detection** field displays a reactive button that changes color (illuminates) when motion is detected by the Modero panel's front motion sensor. • The **Motion Sensor Port** field indicates the port used to report the motion sensor channel back to the NetLinx Master (set in TPD4) ***(read-only).*** • The **Motion Sensor Channel** field indicates the channel used to report the motion sensor channel back to the NetLinx Master (set in TPD4) ***(read-only).***
Wake On Motion:	The Wake Panel Sensitivity relates to the sensitivity of the motion sensor to detect motion and wake the panel accordingly. • Toggle the **Enable**/**Enabled** button to either active/inactive this feature: - **Enable** - activates this feature. Activating this feature reactivates the panel from a panel timeout (sleep) mode. - **Enabled** - (*illuminated when selected*) deactivates this feature and makes the panel use the specified Display Timeout value set on the Setup Page. • Use the **Wake Panel** UP/DN buttons to alter the sensitivity value. - Range = 0 - 100. The horizontal WAKE PANEL SENSITIVITY bargraph indicates the current motion sensitivity value associated with waking the panel from a timeout.
IR Receive Selection:	Press either of the two buttons to enable or disable 38 KHz or 455 KHz IR signals to be received by the panel.
Motion:	The Motion bargraph displays a vertical bargraph indicating the current value of the motion detected by the on-board motion detector.

Making the most of the Light bargraph

By setting a certain minimum or maximum amount of light to be received by the device, the Light bargraph may be used to trigger particular commands in NetLinx. The red line on the Light Sensor bargraph is the threshold level. It is used to determine the level of light at which to activate the Light Sensor Channel. The channel is activated when the light level is below the threshold and deactivated when above the threshold. For more information, refer to the *Programming* section on page 73.

Making the most of the Motion Sensor feature

The motion sensor works by detecting the heat of objects passing by the front of the touch panel. Because of this, the sensor works best when detecting lateral movement, such as when a person walks in front of the touch panel from left to right. This appears in the Motion Sensor bar based on the signal strength: a hand waved directly in front of the motion sensor is going to produce a stronger signal than a person walking by at the outer range of the sensor. The sensitivity may be modified by environmental conditions, such as increased body heat or outside heat sources such as sunbeams or heater vents. To set the Motion Sensor to best effect:

1. Ascertain the intended sensitivity of the Motion Sensor. For instance, check to see if commands are to be initiated by someone walking past the touch panel, if someone enters the room at the edge of the touch panel's range, or if someone specifically reaches for the panel's face.
2. Open the *Sensor Settings* page (FIG. 57) from the *Protected Setup* menu section.
3. Watch the movement of the Motion Sensor bar while holding perfectly still. This allows tracking of other factors that might affect the Motion Sensor, such as air conditioner vents or moving curtains.
4. Copy the movement intended to set off the Sensor while watching the Motion Sensor bar, such as walking past the device. In particular, watch for the spikes in the bar where the sensor picked up the most movement.
5. Set the Motion Sensor bar to the desired sensitivity, making sure that it is located below the spikes previously noted. If the bar is set above the level of the spikes, the Motion Sensor may never be set off by that level of motion.
6. Repeat the movement and check to see if the movement exceeds the bar setting. Adjust the bar as necessary to set the desired sensitivity.

SIP Settings Page

The options on the SIP Settings page (FIG. 58) enable you to establish network settings for using your touch panel as an IP phone. With a CSG SIP Communications Gateway (**FG2182-01, -02, -03**), you can use your touch panel to make and receive local, long distance, and international phone calls, and have access to phone features like call waiting, caller ID, call forwarding, call queuing, and voice mail.

Setting up your touch panel as a telephone requires that you set it up as one in the CSG SIP Communications Gateway. Refer to the *CSG SIP Communications Gateway Operation/Reference Guide* for information on setting up your touch panel to work as a telephone.

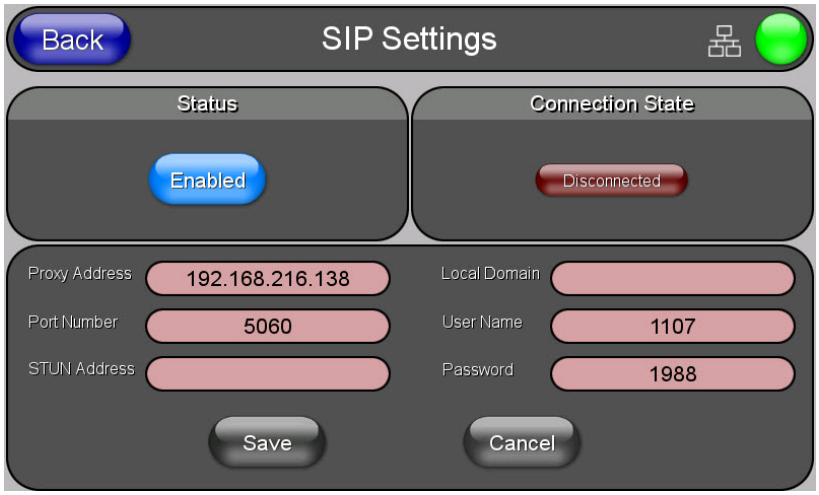

FIG. 58 SIP Settings Page

You may need to load a Duet module to enable the touch panel to receive SIP calls. The Duet module translates between the standard interface and the device protocol. It parses the buffer for responses from the device, sends strings to control the device, and receives commands from the UI module or telnet sessions.

Refer to the documentation supplied with the Duet Module for more details

.

NOTE

A sample UI module is provided in the module package. It is not intended to cover every possible application, but can be expanded as needed by a dealer to meet the requirements of a particular installation.

Features on this page include:

SIP Settings Page	
Back:	Saves all changes and returns to the previous page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master. • Bright red - disconnected • Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green. • Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received. ***Note**: A lock appears on the icon if the panel is connected to a secured NetLinx Master.*
Status:	This option enables the SIP Stack on startup. If you disable this option, the panel will not attempt to read the rest of the configuration and will not register with a proxy server. However, point-to-point SIP will still be enabled allowing for existing intercom functionality.
Connection State:	This option displays whether you are connected to the proxy server.

SIP Settings Page (Cont.)	
Proxy Address:	This option enables you to enter the IP address or DNS name of the proxy server that you want to use to register.
Port Number:	The option displays the port you use to connect to the proxy server. The standard SIP port is 5060, but some providers use different ports.
STUN Address:	This option enables you to enter the IP address or DNS name of the Simple Traversal of UDP through NATs (STUN) server. This field is optional.
Local Domain:	This is the realm used for authentication. This field is optional.
User Name:	This option enables you to enter the user name used for authentication to the proxy server. Normally, the user name is the same as the phone number assigned to the extension you are using. This field is optional.
Password:	This option enables you to enter the password for the user at the proxy server. This field is optional.

Tools

The Tools button provides a menu to select either the *Panel Connection Logs Page* section on page 68, the *Panel Statistics Page* section on page 69, or the *Connection Utility* section on page 71. Select any of the options to access that page.

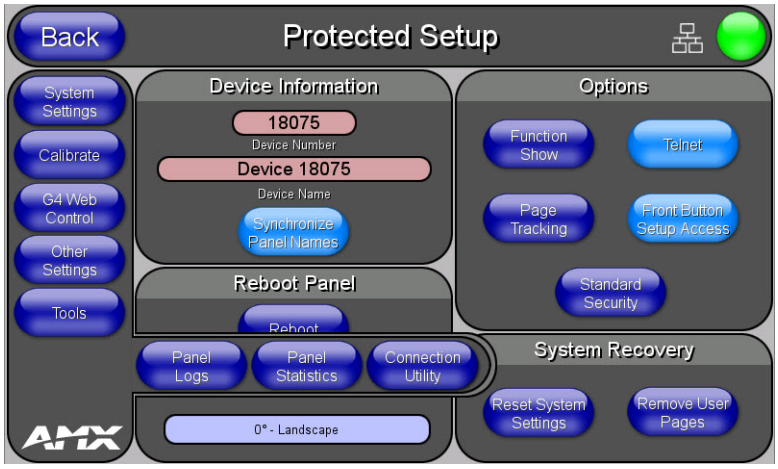

FIG. 59 Tools popup menu

Panel Connection Logs Page

The options on the *Panel Connection Logs* page allows viewing and tracking of the connection history for the panel (FIG. 60).

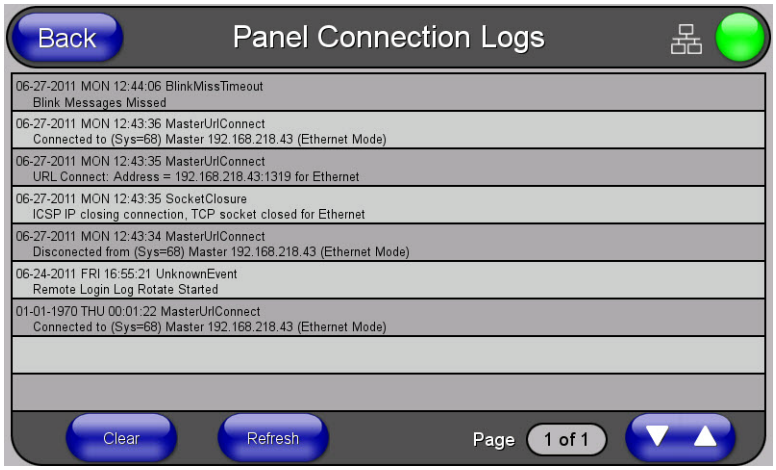
Back
Panel Connection Logs
06-27-2011 MON 12:44:06 BlinkMissTimeout
Blink Messages Missed
06-27-2011 MON 12:43:36 MasterUrlConnect
Connected to (Sys=68) Master 192.168.218.43 (Ethernet Mode)
06-27-2011 MON 12:43:35 MasterUrlConnect
URL Connect: Address = 192.168.218.43:1319 for Ethernet
06-27-2011 MON 12:43:35 SocketClosure
ICSP IP closing connection, TCP socket closed for Ethernet
06-27-2011 MON 12:43:34 MasterUrlConnect
Disconected from (Sys=68) Master 192.168.218.43 (Ethernet Mode)
06-24-2011 FRI 16:55:21 UnknownEvent
Remote Login Log Rotate Started
01-01-1970 THU 00:01:22 MasterUrlConnect
Connected to (Sys=68) Master 192.168.218.43 (Ethernet Mode)
Clear
Refresh
Page
1 of 1

FIG. 60 Panel Connection Logs page

Features on this page are as follows:

Panel Connection Logs Page	
Back:	Saves all changes and returns to the previous page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).

Panel Connection Page (Cont.)	
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master. • Bright red - disconnected • Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green. • Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received. ***Note**: a Lock appears on the icon if the panel is connected to a secured NetLinx Master.*
Connection Logs:	A history of all connections, attempts, and failures for the panel.
Clear:	Clears the Connection Logs history.
Refresh:	Refreshes the Connection Logs history.
Page:	Indicates the current page of the Connection Logs. Use the Up and Down arrows to move from one page to the next.

Checking the Panel Connection Logs

1. From the *Protected Setup* page, press the **Tools** button. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Logs** button. All connection data is contained in the section *Connection Logs*.

Refreshing the Panel Connections Log

1. From the *Protected Setup* page, press the **Tools** button. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Logs** button.
3. Push the **Refresh** button.

Clearing the Panel Connections Log

1. From the *Protected Setup* page, press the **Tools** button. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Logs** button.
3. Push the **Clear** button and confirm your selection.

Panel Statistics Page

The options on the Panel Statistics page allow you to track the connection status for the panel. The *Panel Statistics* page tracks ICSP messages, Blink messages, and Ethernet connection statistics (FIG. 61).

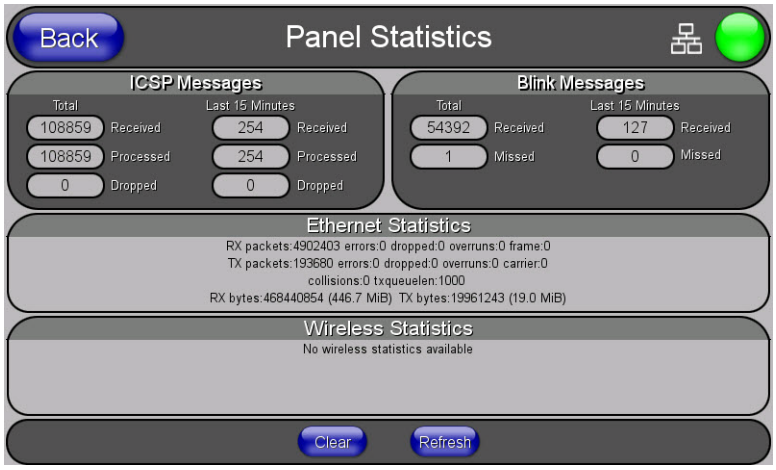

FIG. 61 Panel Statistics page

Features on this page are as follows:

Panel Statistics Page	
Back:	Saves all changes and returns to the previous page.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master. • Bright red - disconnected • Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green. • Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received. ***Note**: a Lock appears on the icon if the panel is connected to a secured NetLinx Master.*
ICSP Messages	Messages sent between the master and the touch panel; it is the protocol they use to communicate to each other.
Total	• Received - The total ICSP messages received by the panel. • Processed - The total ICSP messages processed by the panel. • Dropped - The total ICSP messages dropped by the panel.
Last 15 Minutes	• Received - The total ICSP messages received by the panel in the last 15 minutes. • Processed - The total ICSP messages processed by the panel in the last 15 minutes. • Dropped - The total ICSP messages dropped by the panel in the last 15 minutes.
Blink Messages	The master sends this message once every 5 seconds to all connected devices.
Total	• Received - The total Blink messages received by the panel. • Missed - The total Blink messages missed by the panel.
Last 15 Minutes	• Received - The total Blink messages received by the panel in the last 15 minutes. • Missed - The total Blink messages missed by the panel in the last 15 minutes.
Ethernet Statistics	The Ethernet connection statistics for the panel.
Wireless Statistics	Since the NXD-500i does not have wireless capability, this field is disabled.
Clear	Clears all panel connection statistics.
Refresh	Refreshes all panel connection statistics.

Checking the Panel Statistics

1. From the *Protected Setup* page, press the **Tools** button. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Statistics** button. All connection statistics are contained on this page, e.g., *Received, Processed, and Dropped ICSP Messages*.

Refreshing the Panel Statistics

1. From the *Protected Setup* page, press the **Tools** button. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Statistics** button.
3. Push the **Refresh** button.

Clearing the Panel Statistics

1. From the *Protected Setup* page, press the **Tools** button. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Statistics** button.
3. Push the **Clear** button.
4. Confirm the selection.

Connection Utility

The options on the *Connection Utility* popup window allow you to verify connection information and statistics for the panel (FIG. 62).

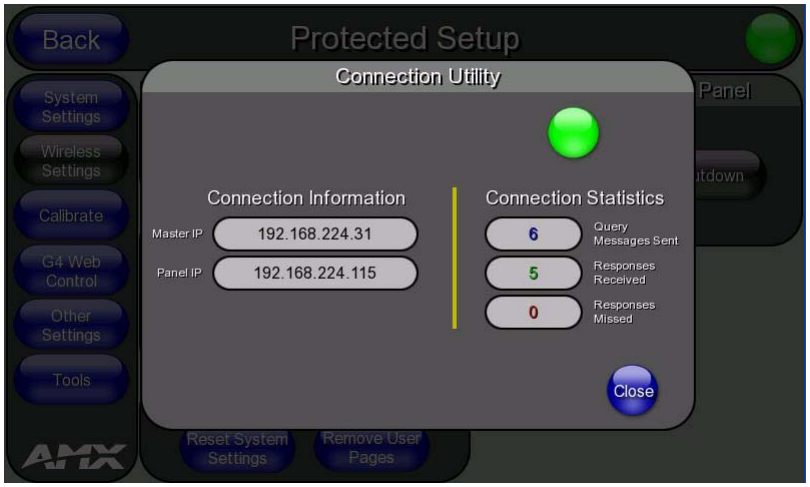

FIG. 62 Connection Utility popup window

Connection Utility Window	
Close:	Closes the *Connection Utility* popup.
Wired icon:	The icon to the left of the Connection Status Icon displays that the current connection to the Master is *Wired* (image of three networked computers).
Connection Status icon:	The icon in the upper-right corner of the utility provides a constant visual indication of current connection status. A message is sent to the master once per second and expects a response. • If it is received, the button stays green. • If it is missed, the button goes yellow. • After three misses (3 seconds), it will go red until a response from the master is received, and then it will be green again. Once per second, a user can know if the immediate area is a good wireless area (all green), an area of limited coverage (lots of yellow, some green, some red), or an area with no coverage (all red).
Connection Information	
Master IP	The IP Address for the connected master.
Panel IP	The IP Address for the panel.
Connection Statistics	
Messages Sent	The number of messages sent from the panel to the master.
Responses Received	The number of responses the panel has received from the master.
Responses Missed	The number of expected responses from the master to the panel missed.
Close:	Press this button to close the popup window and return to the Protected Setup page.

Using the Connection Utility

1. From the *Protected Setup* page, press the **Tools** button. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Connection Utility** button to launch the *Connection Utility* popup.
3. The *Connection Information* notes the IP of the connected master and the IP of the panel. The *Connection Statistics* show the current quality of the panel connection.
4. Push **Close** when finished.

Programming

Overview

The NXD-500i may be programmed, using the commands in this section, to perform a wide variety of operations using Send_Commands and variable text commands.

A device must first be defined in the NetLinx programming language with values for the Device: Port: System

In all programming examples - ***Panel*** is used in place of these values and represents all Modero panels).

Verify that you are using the latest NetLinx Master and Modero firmware, and verify that you are using the latest version of NetLinx Studio and TPD4.

Button Assignments

- Button Channel Range: 1 - 4000 Button push and Feedback (per address port)
- Button Variable Text range: 1 - 4000 (per address port)
- Button States Range: 1 - 256 (0 = All states, for General buttons 1 = Off state and 2 = On state).
- Level Range: 1 - 600 (Default level value 0 - 255, can be set up to 1 - 65535)
- Address port Range: 1 - 100

These button assignments can only be adjusted in TPD4 and not on the panels themselves.

Page Commands

These Page Commands are used in NetLinx Programming Language and are case insensitive.

Page Commands	

@APG	Add the popup page to a specified popup group, if it does not already exist.
	If the new popup is added to a group which has a popup displayed on the current page along with the new pop-up, the displayed popup will be hidden and the new popup will be displayed.
	Syntax:
	`"'@APG-<popup page name>;<popup group name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	popup group name = 1 - 50 ASCII characters. Name of the popup group.
	Example:
	`SEND_COMMAND Panel,"'@APG-Popup1;Group1'"`
	Adds the popup page 'Popup1' to the popup group 'Group1'.

@CPG	Clear all popup pages from specified popup group.
	Syntax:
	`"'@CPG-<popup group name>'"`
	Variable:
	popup group name = 1 - 50 ASCII characters. Name of the popup group.
	Example:
	`SEND_COMMAND Panel,"'@CPG-Group1'"`
	Clears all popup pages from the popup group 'Group1'.

Page Commands (Cont.)	

@DPG	Delete a specific popup page from specified popup group if it exists.
	Syntax:
	`"'@DPG-<popup page name>;<popup group name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	popup group name = 1 - 50 ASCII characters. Name of the popup group.
	Example:
	`SEND_COMMAND Panel,"'@DPG-Popup1;Group1'"`
	Deletes the popup page 'Popup1' from the popup group 'Group1'.

@PDR	Set the popup location reset flag. If the flag is set, the popup will return to its default location on show instead of its last drag location.
	Syntax:
	`"'@PDR-<popup page name>;<reset flag>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	reset flag = 1 = Enable reset flag
	0 = Disable reset flag
	Example:
	`SEND_COMMAND Panel,"'@PDR-Popup1;1'"`
	Popup1 will return to its default location when turned On.

@PHE	Set the hide effect for the specified popup page to the named hide effect.
	Syntax:
	`"'@PHE-<popup page name>;<hide effect name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	hide effect name = Refers to the popup effect names being used.
	Example:
	`SEND_COMMAND Panel,"'@PHE-Popup1;Slide to Left'"`
	Sets the Popup1 hide effect name to 'Slide to Left'.

@PHP	Set the hide effect position. Only 1 coordinate is ever needed for an effect; however, the command will specify both. This command sets the location at which the effect will end at.
	Syntax:
	`"'@PHP-<popup page name>;<x coordinate>,<y coordinate>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PHP-Popup1;75,0'"`
	Sets the Popup1 hide effect x-coordinate value to 75 and the y-coordinate value to 0.

@PHT	Set the hide effect time for the specified popup page.
	Syntax:
	`"'@PHT-<popup page name>;<hide effect time>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	hide effect time = Given in 1/10ths of a second.
	Example:
	`SEND_COMMAND Panel,"'@PHT-Popup1;50'"`
	Sets the Popup1 hide effect time to 5 seconds.

Page Commands (Cont.)	

@PPA	Close all popups on a specified page.
	• If the page name is empty, the current page is used.
	• This command works in the same way as the 'Clear Page' command in TPDesign4.
	Syntax:
	`"'@PPA-<page name>'"`
	Variable:
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPA-Page1'"`
	Close all popups on Page1.

@PPF	Deactivate a specific popup page on either a specified page or the current page.
	• If the page name is empty, the current page is used (see example 2).
	• If the popup page is part of a group, the whole group is deactivated.
	• This command works in the same way as the 'Hide Popup' command in TPDesign4.
	Syntax:
	`"'@PPF-<popup page name>;<page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPF-Popup1;Main'"`
	Deactivates the popup page 'Popup1' on the Main page.
	Example 2:
	`SEND_COMMAND Panel,"'@PPF-Popup1'"`
	Deactivates the popup page 'Popup1' on the current page.

@PPG	Toggle a specific popup page on either a specified page or the current page.
	Toggling refers to the activating/deactivating (On/Off) of a popup page.
	• If the page name is empty, the current page is used (see example 2).
	• This command works in the same way as the 'Toggle Popup' command in TPDesign4.
	Syntax:
	`"'@PPG-<popup page name>;<page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPG-Popup1;Main'"`
	Toggles the popup page 'Popup1' on the 'Main' page from one state to another (On/Off).
	Example 2:
	`SEND_COMMAND Panel,"'@PPG-Popup1'"`
	Toggles the popup page 'Popup1' on the current page from one state to another (On/Off).

@PPK	Kill a specific popup page from all pages.
	• *Kill* refers to the deactivating (Off) of a popup window from all pages.
	• If the pop-up page is part of a group, the whole group is deactivated.
	• This command works in the same way as the 'Clear Group' command in TPDesign 4.
	Syntax:
	`"'@PPK-<popup page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	Example:
	`SEND_COMMAND Panel,"'@PPK-Popup1'"`
	Kills the popup page 'Popup1' on all pages.

Page Commands (Cont.)	

@PPM	Set the modality of a specific popup page to *Modal* or *NonModal*.
	A Modal popup page, when active, only allows use of the buttons and features on that popup page. All other buttons on the panel page are inactivated.
	Syntax:
	`"'@PPM-<popup page name>;<mode>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	mode = NONMODAL converts a previously Modal popup page to a NonModal.
	MODAL converts a previously NonModal popup page to Modal.
	modal = 1 and non-modal = 0
	Example:
	`SEND_COMMAND Panel,"'@PPM-Popup1;Modal'"`
	Sets the popup page 'Popup1' to Modal.
	`SEND_COMMAND Panel,"'@PPM-Popup1;1'"`
	Sets the popup page 'Popup1' to Modal.

@PPN	Activate a specific popup page to launch on either a specified page or the current page.
	• If the page name is empty, the current page is used (see example 2).
	• If the popup page is already on, do not re-draw it.
	• This command works in the same way as the 'Show Popup' command in TPDesign4.
	Syntax:
	`"'@PPN-<popup page name>;<page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPN-Popup1;Main'"`
	Activates 'Popup1' on the 'Main' page.
	Example 2:
	`SEND_COMMAND Panel,"'@PPN-Popup1'"`
	Activates the popup page 'Popup1' on the current page.

@PPT	Set a specific popup page to timeout within a specified time.
	If timeout is empty, the popup page will clear the timeout.
	Syntax:
	`"'@PPT-<popup page name>;<timeout>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	timeout = Timeout duration in 1/10ths of a second.
	Example:
	`SEND_COMMAND Panel,"'@PPT-Popup1;30'"`
	Sets the popup page 'Popup1' to timeout within 3 seconds.

@PPX	Close all popups on all pages.
	This command works in the same way as the 'Clear All' command in TPDesign 4.
	Syntax:
	`"'@PPX'"`
	Example:
	`SEND_COMMAND Panel,"'@PPX'"`
	Close all popups on all pages.

Page Commands (Cont.)	

@PSE	Set the show effect for the specified popup page to the named show effect.
	Syntax:
	`"'@PSE-<popup page name>;<show effect name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	show effect name = Refers to the popup effect name being used.
	Example:
	`SEND_COMMAND Panel,"'@PSE-Popup1;Slide from Left'"`
	Sets the Popup1 show effect name to 'Slide from Left'.

@PSP	Set the show effect position. Only 1 coordinate is ever needed for an effect; however, the command will specify both.
	This command sets the location at which the effect will begin.
	Syntax:
	`"'@PSP-<popup page name>;<x coordinate>,<y coordinate>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PSP-Popup1;100,0'"`
	Sets the Popup1 show effect x-coordinate value to 100 and the y-coordinate value to 0.

@PST	Set the show effect time for the specified popup page.
	Syntax:
	`"'@PST-<popup page name>;<show effect time>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	show effect time = Given in 1/10ths of a second.
	Example:
	`SEND_COMMAND Panel,"'@PST-Popup1;50'"`
	Sets the Popup1 show effect time to 5 seconds.

PAGE	Flips to a page with a specified page name. If the page is currently active, it will not redraw the page.
	Syntax:
	`"'PAGE-<page name>'"`
	Variable:
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'PAGE-Page1'"`
	Flips to page1.

PPOF	Deactivate a specific popup page on either a specified page or the current page.
	• If the page name is empty, the current page is used (see example 2).
	• If the popup page is part of a group, the whole group is deactivated.
	• This command works in the same way as the 'Hide Popup' command in TPDesign4.
	Syntax:
	`"'PPOF-<popup page name>;<page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'PPOF-Popup1;Main'"`
	Deactivates the popup page 'Popup1' on the Main page.
	Example 2:
	`SEND_COMMAND Panel,"'PPOF-Popup1'"`
	Deactivates the popup page 'Popup1' on the current page.

Page Commands (Cont.)	

PPOG	Toggle a specific popup page on either a specified page or the current page.
	• *Toggling* refers to the activating/deactivating (On/Off) of a popup page.
	• If the page name is empty, the current page is used (see example 2).
	• This command works in the same way as the 'Toggle Popup' command in TPDesign4.
	Syntax:
	`"'PPOG-<popup page name>;<page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'PPOG-Popup1;Main'"`
	Toggles the popup page 'Popup1' on the Main page from one state to another (On/Off).
	Example 2:
	`SEND_COMMAND Panel,"'PPOG-Popup1'"`
	Toggles the popup page 'Popup1' on the current page from one state to another (On/Off).

PPON	Activate a specific popup page to launch on either a specified page or the current page.
	• If the page name is empty, the current page is used (see example 2).
	• If the popup page is already On, do not re-draw it.
	• This command works in the same way as the 'Show Popup' command in TPDesign4.
	Syntax:
	`"'PPON-<popup page name>;<page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'PPON-Popup1; Main'"`
	Activates the popup page 'Popup1' on the Main page.
	Example 2:
	`SEND_COMMAND Panel,"'PPON-Popup1'"`
	Activates the popup page 'Popup1' on the current page.

Programming Numbers for Colors, Fonts, and Borders

Colors can be used to set the colors on buttons, sliders, and pages. The lowest color number represents the lightest color-specific display and the highest number represents the darkest display.

For example, 0 represents light red, and 5 is dark red.

RGB Triplets and Names For Basic 88 Colors

RGB Values for all 88 Basic Colors

Index No.	Name	Red	Green	Blue	Index No.	Name	Red	Green	Blue
00	Very Light Red	255	0	0	50	Blue	0	0	191
01	Light Red	223	0	0	52	Dark Blue	0	0	127
02	Red	191	0	0	53	Very Dark Blue	0	0	95
03	Medium Red	159	0	0	54	Very Light Purple	128	0	255
04	Dark Red	127	0	0	55	Light Purple	112	0	223
05	Very Dark Red	95	0	0	56	Purple	96	0	191
06	Very Light Orange	255	128	0	57	Medium Purple	80	0	159
07	Light Orange	223	112	0	58	Dark Purple	64	0	127
08	Orange	191	96	0	59	Very Dark Purple	48	0	95
09	Medium Orange	159	80	0	60	Very Light Magenta	255	0	255
10	Dark Orange	127	64	0	61	Light Magenta	223	0	223
11	Very Dark Orange	95	48	0	62	Magenta	191	0	191
12	Very Light Yellow	255	255	0	63	Medium Magenta	159	0	159
13	Light Yellow	223	223	0	64	Dark Magenta	127	0	127
14	Yellow	191	191	0	65	Very Dark Magenta	95	0	95
15	Medium Yellow	159	159	0	66	Very Light Pink	255	0	128
16	Dark Yellow	127	127	0	67	Light Pink	223	0	112
17	Very Dark Yellow	95	95	0	68	Pink	191	0	96
18	Very Light Lime	128	255	0	69	Medium Pink	159	0	80
19	Light Lime	112	223	0	70	Dark Pink	127	0	64
20	Lime	96	191	0	71	Very Dark Pink	95	0	48
21	Medium Lime	80	159	0	72	White	255	255	255
22	Dark Lime	64	127	0	73	Grey1	238	238	238
23	Very Dark Lime	48	95	0	74	Grey3	204	204	204
24	Very Light Green	0	255	0	75	Grey5	170	170	170
25	Light Green	0	223	0	76	Grey7	136	136	136
26	Green	0	191	0	77	Grey9	102	102	102
27	Medium Green	0	159	0	78	Grey4	187	187	187
28	Dark Green	0	127	0	79	Grey6	153	153	153
29	Very Dark Green	0	95	0	80	Grey8	119	119	119
30	Very Light Mint	0	255	128	81	Grey10	85	85	85
31	Light Mint	0	223	112	82	Grey12	51	51	51
32	Mint	0	191	96	83	Grey13	34	34	34
33	Medium Mint	0	159	80	84	Grey2	221	221	221
34	Dark Mint	0	127	64	85	Grey11	68	68	68
35	Very Dark Mint	0	95	48	86	Grey14	17	17	17
36	Very Light Cyan	0	255	255	87	Black	0	0	0
37	Light Cyan	0	223	223	255	TRANSPARENT	99	53	99
38	Cyan	0	191	191					
39	Medium Cyan	0	159	159					
40	Dark Cyan	0	127	127					
41	Very Dark Cyan	0	95	95					
42	Very Light Aqua	0	128	255					
43	Light Aqua	0	112	223					
44	Aqua	0	96	191					
45	Medium Aqua	0	80	159					
46	Dark Aqua	0	64	127					
47	Very Dark Aqua	0	48	95					
48	Very Light Blue	0	0	255					
49	Light Blue	0	0	223					

Font Styles and ID Numbers

Font styles can be used to program the text fonts on buttons, sliders, and pages. The following chart shows the default font type and their respective ID numbers generated by TPDesign4.

Default Font Styles and ID Numbers

Font ID #	Font type	Size	Font ID #	Font type	Size
1	Courier New	9	19	Arial	9
2	Courier New	12	20	Arial	10
3	Courier New	18	21	Arial	12
4	Courier New	26	22	Arial	14
5	Courier New	32	23	Arial	16
6	Courier New	18	24	Arial	18
7	Courier New	26	25	Arial	20
8	Courier New	34	26	Arial	24
9	AMX Bold	14	27	Arial	36
10	AMX Bold	20	28	Arial Bold	10
11	AMX Bold	36	29	Arial Bold	8
			32 - Variable Fonts start at 32.		

*Fonts must be imported into a TPDesign4 project file. The font ID numbers are assigned by TPDesign4. These values are also listed in the **Generate Programmer's Report**.*

Border Styles and Programming Numbers

Border styles may be used to program borders on buttons, sliders, and popup pages.

Border Styles and Programming Numbers

No.	Border styles	No.	Border styles
0-1	No border	10-11	Picture frame
2	Single line	12	Double line
3	Double line	20	Bevel-S
4	Quad line	21	Bevel-M
5-6	Circle 15	22-23	Circle 15
7	Single line	24-27	Neon inactive-S
8	Double line	40-41	Diamond 55
9	Quad line		

TPD4 Border Styles by Name

The TPDesign4 Touch Panel Design program has pre-set border styles that are user-selectable. The following number values may not be used for programming purposes when changing border styles.

TPD4 border styles may ONLY be changed by using the name.

TPD4 Border Styles by Name

No.	Border styles	No.	Border styles
1	None	27	Cursor Bottom
2	AMX Elite -L	28	Cursor Bottom with Hole
3	AMX Elite -M	29	Cursor Top
4	AMX Elite -S	30	Cursor Top with Hole
5	Bevel -L	31	Cursor Left
6	Bevel -M	32	Cursor Left with Hole
7	Bevel -S	33	Cursor Right
8	Circle 15	34	Cursor Right with Hole
9	Circle 25	35	Custom Frame
10	Circle 35	36	Diamond 15
11	Circle 45	37	Diamond 25
12	Circle 55	38	Diamond 35
13	Circle 65	39	Diamond 45
14	Circle 75	40	Diamond 55
15	Circle 85	41	Diamond 65
16	Circle 95	42	Diamond 75
17	Circle 105	43	Diamond 85
18	Circle 115	44	Diamond 95
19	Circle 125	45	Diamond 105
20	Circle 135	46	Diamond 115
21	Circle 145	47	Diamond 125
22	Circle 155	48	Diamond 135
23	Circle 165	49	Diamond 145
24	Circle 175	50	Diamond 155
25	Circle 185	51	Diamond 165
26	Circle 195	52	Diamond 175
53	Diamond 185	97	Menu Bottom Rounded 185
54	Diamond 195	98	Menu Bottom Rounded 195
55	Double Bevel -L	99	Menu Top Rounded 15
56	Double Bevel -M	100	Menu Top Rounded 25
57	Double Bevel -S	101	Menu Top Rounded 35
58	Double Line	102	Menu Top Rounded 45
59	Fuzzy	103	Menu Top Rounded 55
60	Glow-L	104	Menu Top Rounded 65
61	Glow-S	105	Menu Top Rounded 75
62	Help Down	106	Menu Top Rounded 85
63	Neon Active -L	107	Menu Top Rounded 95
64	Neon Active -S	108	Menu Top Rounded 105
65	Neon Inactive -L	109	Menu Top Rounded 115
66	Neon Inactive -S	110	Menu Top Rounded 125
67	Oval H 60x30	111	Menu Top Rounded 135
68	Oval H 100x50	112	Menu Top Rounded 145
69	Oval H 150x75	113	Menu Top Rounded 155
70	Oval H 200x100	114	Menu Top Rounded 165
71	Oval V 30x60	115	Menu Top Rounded 175
72	Oval V 50x100	116	Menu Top Rounded 185
73	Oval V 75x150	117	Menu Top Rounded 195
74	Oval V 100x200	118	Menu Right Rounded 15
75	Picture Frame	119	Menu Right Rounded 25
76	Quad Line	120	Menu Right Rounded 35
77	Single Line	121	Menu Right Rounded 45

TPD4 Border Styles by Name (Cont.)			
78	Windows Style Popup	122	Menu Right Rounded 55
79	Windows Style Popup (Status Bar)	123	Menu Right Rounded 65
80	Menu Bottom Rounded 15	124	Menu Right Rounded 75
81	Menu Bottom Rounded 25	125	Menu Right Rounded 85
82	Menu Bottom Rounded 35	126	Menu Right Rounded 95
83	Menu Bottom Rounded 45	127	Menu Right Rounded 105
84	Menu Bottom Rounded 55	128	Menu Right Rounded 115
85	Menu Bottom Rounded 65	129	Menu Right Rounded 125
86	Menu Bottom Rounded 75	130	Menu Right Rounded 135
87	Menu Bottom Rounded 85	131	Menu Right Rounded 145
88	Menu Bottom Rounded 95	132	Menu Right Rounded 155
89	Menu Bottom Rounded 105	133	Menu Right Rounded 165
90	Menu Bottom Rounded 115	134	Menu Right Rounded 175
91	Menu Bottom Rounded 125	135	Menu Right Rounded 185
92	Menu Bottom Rounded 135	136	Menu Right Rounded 195
93	Menu Bottom Rounded 145	137	Menu Left Rounded 15
94	Menu Bottom Rounded 155	138	Menu Left Rounded 25
95	Menu Bottom Rounded 165	139	Menu Left Rounded 35
96	Menu Bottom Rounded 175	140	Menu Left Rounded 45
141	Menu Left Rounded 55	149	Menu Left Rounded 135
142	Menu Left Rounded 65	150	Menu Left Rounded 145
143	Menu Left Rounded 75	151	Menu Left Rounded 155
144	Menu Left Rounded 85	152	Menu Left Rounded 165
145	Menu Left Rounded 95	153	Menu Left Rounded 175
146	Menu Left Rounded 105	154	Menu Left Rounded 185
147	Menu Left Rounded 115	155	Menu Left Rounded 195
148	Menu Left Rounded 125		

Telnet Commands

These Telnet Commands are used in NetLinx Studio and are case insensitive.

Telnet Commands	
set motion beep	Enables/disables button beep sound. This will enable/disable the button beep sound when the motion sensor detects a motion level that rises above the threshold set by the user. It is intended to be used as an aid during motion testing.
show sensors	Displays realtime data from motion and light sensors. This command is similar to the **batt mon** command in operation, except that it displays realtime data related to the Motion and Light sensors. Sensor data is displayed as scrolling text at the rate of 200 ms (default). The loop interval is optional and is in units of "100 milliseconds", e.g., interval = 2 results in a loop interval of 200 ms (5 hz). The following is a description of data items that are displayed: • *Motion - level:* The level of motion detected by the sensor. • *Motion - threshold:* The threshold set by the user for activating the Channel. • *Light - lux:* The amount of lux observed by the light sensor. • *Light - avg:* The average logarithmic value of lux (avg log(lux)). • *Light - BL lvl:* The current backlight level (brightness). • *Light - BL abs:* The backlight level determined by the auto-brightness feature (absolute). This value is a measure of the light sensor calibration. At full brightness (when "BL lvl" = 100), this value should also equal 100. • *Light - threshold:* The light threshold set by the user. When "BL lvl" falls below the threshold the channel is activated with a "push" or "on". Above threshold is "release" or "off".

Telnet Commands (Cont.)	
cal light	This command initiates a light sensor calibration routine. This routine takes 30 seconds to complete. During this routine, the firmware will record the maximum light value detected and use this value as the normal light level in which the panel will be operating. This will enable the panel's "auto-brightness" feature to operate correctly. • Be sure to move away from the front of the panel during the light calibration to allow the light sensor to "see" maximum brightness. • The panel should be positioned (installed) and operating in the expected light conditions that the panel will be expected to be used. ***Note**: There is no response to indicate that the command is complete.*

Button Commands ("^")

These Button Commands are used in NetLinx Studio and are case insensitive.

All commands that begin with "^" have the capability of assigning a variable text address range and button state range.

A device must first be defined in the NetLinx programming language with values for the Device: Port: System (in all programming examples - ***Panel*** is used in place of these values).

- **Variable text ranges** allow you to target 1 or more variable text channels in a single command.
- **Button State ranges** allow you to target 1 or more states of a variable text button with a single command.
- **"."** Character is used for the 'through' notation, also the "**&**" character is used for the 'And' notation.

"^" Button Commands	

^ANI	Run a button animation (in 1/10 second).
	Syntax:
	`"'^ANI-<vt addr range>,<start state>,<end state>,<time>'"`
	Variable:
	variable text address range = 1 - 4000.
	start state = Beginning of button state (0= current state).
	end state = End of button state.
	time = In 1/10 second intervals.
	Example:
	`SEND_COMMAND Panel,"'^ANI-500,1,25,100'"`
	Runs a button animation at text range 500 from state 1 to state 25 for 10 second.

^APF	Add page flip action to a button if it does not already exist.
	Syntax:
	`"'^APF-<vt addr range>,<page flip action>,<page name>'"`
	Variable:
	variable text address range = 1 - 4000.
	page flip action = **Stan**[dardPage] - Flip to standard page
	Prev[iousPage] - Flip to previous page
	Show[Popup] - Show Popup page
	Hide[Popup] - Hide Popup page
	Togg[lePopup] - Toggle popup state
	ClearG[roup] - Clear popup page group from all pages
	ClearP[age] - Clear all popup pages from a page with the specified page name
	ClearA[ll] - Clear all popup pages from all pages
	page name = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'^APF-400,Stan,Main Page'"`
	Assigns a button to a standard page flip with page name 'Main Page'.

"^" Button Commands (Cont.)	

^BAT	Append non-unicode text.
	Syntax:
	`"'^BAT-<vt addr range>,<button states range>,<new text>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	new text = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BAT-520,1,Enter City'"`
	Appends the text 'Enter City' to the button's OFF state.

^BAU	Append unicode text.
	Same format as ^UNI.
	Syntax:
	`"'^BAU-<vt addr range>,<button states range>,<unicode text>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	unicode text = 1 - 50 ASCII characters. Unicode characters must be entered in Hex format.
	Example:
	`SEND_COMMAND Panel,"'^BAU-520,1,00770062'"`
	Appends Unicode text '00770062' to the button's OFF state.

^BCB	Set the border color to the specified color. *Only if the specified border color is not the same as the current color.*
	***Note**: Colors can be set by Color Numbers, Color name, R,G,B,alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB). Refer to theRGB Values for all 88 Basic Colors table on page 79.*
	Syntax:
	`"'^BCB-<vt addr range>,<button states range>,<color value>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	color value = Refer to theRGB Values for all 88 Basic Colors table on page 79 for more information.
	Example:
	`SEND_COMMAND Panel,"'^BCB-500.504&510,1,12'"`
	Sets the Off state border color to 12 (Yellow).

"^" Button Commands (Cont.)	

^BCF	Set the fill color to the specified color. *Only if the specified fill color is not the same as the current color.*
	***Note**: Colors can be set by Color Numbers, Color name, R,G,B,alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB). Refer to theRGB Values for all 88 Basic Colors table on page 79.*
	Syntax:
	`"'^BCF-<vt addr range>,<button states range>,<color value>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	color value = Refer to theRGB Values for all 88 Basic Colors table on page 79 for more information.
	Example:
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,12'"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,Yellow'"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,#F4EC0A63''"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,#F4EC0A'"`
	Sets the Off state fill color by color number.

^BCT	Set the text color to the specified color. *Only if the specified text color is not the same as the current color.*
	***Note**: Colors can be set by Color Numbers, Color name, R,G,B,alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB). Refer to theRGB Values for all 88 Basic Colors table on page 79.*
	Syntax:
	`"'^BCT-<vt addr range>,<button states range>,<color value>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	color value = Refer to theRGB Values for all 88 Basic Colors table on page 79 for more information.
	Example:
	`SEND_COMMAND Panel,"'^BCT-500.504&510,1,12'"`
	Sets the Off state border color to 12 (Yellow).

"^" Button Commands (Cont.)	

^BDO	Determines what order each layer of the button is drawn.
	Syntax:
	`"'^BDO-<vt addr range>,<button states range>,<1-5><1-5><1-5><1-5><1-5>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	layer assignments = Fill Layer = 1
	Image Layer = 2
	Icon Layer = 3
	Text Layer = 4
	Border Layer = 5
	***Note**: The layer assignments are from bottom to top. The default draw order is* **12345**.
	Example:
	`SEND_COMMAND Panel,"'^BDO-530,1&2,51432'"`
	Sets the button's variable text 530 ON/OFF state draw order (from bottom to top) to Border, Fill, Text, Icon, and Image.
	Example 2:
	`SEND_COMMAND Panel,"'^BDO-1,0,12345'"`
	Sets all states of a button back to its default drawing order.

^BFB	Set the feedback type of the button.
	ONLY works on General-type buttons.
	Syntax:
	`"'^BFB-<vt addr range>,<feedback type>'"`
	Variable:
	variable text address range = 1 - 4000.
	feedback type = (None, Channel, Invert, On (Always on), Momentary, and Blink).
	Example:
	`SEND_COMMAND Panel,"'^BFB-500,Momentary'"`
	Sets the Feedback type of the button to 'Momentary'.

^BIM	Set the input mask for the specified address.
	Syntax:
	`"'^BIM-<vt addr range>,<input mask>'"`
	Variable:
	variable text address range = 1 - 4000.
	input mask = Refer to the*Text Area Input Masking* section on page 134 for character types.
	Example:
	`SEND_COMMAND Panel,"'^BIM-500,AAAAAAAAAA'"`
	Sets the input mask to ten 'A' characters, that are required, to either a letter or digit **(entry is required).**

"^" Button Commands (Cont.)	

^BMC	Button copy command. Copy attributes of the source button to all the destination buttons.
	Note that the source is a single button state. Each state must be copied as a separate command.
	The <codes> section represents what attributes will be copied. All codes are 2 char pairs that can be separated by comma, space, percent or just ran together.
	Syntax:
	`"'^BMC-<vt addr range>,<button states range>,<source port>,<source address>,<source state>,<codes>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	source port = 1 - 100.
	source address = 1 - 4000.
	source state = 1 - 256.
	codes:
	BM - Picture/Bitmap
	BR - Border
	CB - Border Color
	CF - Fill Color
	CT - Text Color
	EC - Text effect color
	EF - Text effect
	FT - Font
	IC - Icon
	JB - Bitmap alignment
	JI - Icon alignment
	JT - Text alignment
	OP - Opacity
	SO - Button Sound
	TX - Text
	WW - Word wrap on/off
	Example 1:
	`SEND_COMMAND Panel,"'^BMC-425,1,1,500,1,BR'"`
	or
	`SEND_COMMAND Panel,"'^BMC-425,1,1,500,1,%BR'"`
	Copies the OFF state border of button with a variable text address of 500 onto the OFF state border of button with a variable text address of 425.
	Example 2:
	`SEND_COMMAND Panel,"'^BMC-150,1,1,315,1,%BR%FT%TX%BM%IC%CF%CT'"`
	Copies the OFF state border, font, Text, bitmap, icon, fill color and text color of the button with a variable text address of 315 onto the OFF state border, font, Text, bitmap, icon, fill color and text color of the button with a variable text address of 150.

"^" Button Commands (Cont.)	
^BMF	Set any/all button parameters by sending embedded codes and data. Syntax: `"'^BMF-<vt addr range>,<button states range>,<data>'"` Variables: variable text address char array = 1 - 4000. button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state). level range = 1 - 600 (level value is 1 - 65535). data: '%B<border style>' = Set the border style name. See theBorder Styles and Programming Numbers table on page 80. '%B',<border 0-27,40,41> = Set the borer style number. See theBorder Styles and Programming Numbers table on page 80. '%DO<1-5><1-5><1-5><1-5><1-5> = Set the draw order. Listed from bottom to top. Refer to the ^BDO command on page 86 for more information. '%F',<font 1-8,10,11,20-29,32-xx> = Set the font. See theDefault Font Styles and ID Numbers table on page 80. '%F<font 01-08,10,11,20-29,32-xx>' = Set the font. See theDefault Font Styles and ID Numbers table on page 80. '%MI<mask image>' = Set the mask image. Refer to the ^BMI command on page 90 for more information. '%T<text >' = Set the text using ASCII characters (empty is clear). '%R = Sets button location and also resizes the button. Takes four parameters: left, top, right, bottom. '%P<bitmap>' = Set the picture/bitmap filename (empty is clear). '%I',<icon 01-9900, 0-clear>' = Set the icon using values of 01 - 9900 (icon numbers are assigned in the TPDesign4 Resource Manager tab - Slots section). '%I<icon 01-9900, 0-clear>' = Set the icon using values of 01 - 9900 (icon numbers are assigned in the TPDesign4 Resource Manager tab - Slots section). '%J',<alignment of text 1-9> = As shown the following telephone keypad alignment chart: 0 1 2 3 4 5 6 7 8 9 Zero can be used for an absolute position '%JT<alignment of text 0-9>' = As shown the above telephone keypad alignment chart, **BUT** the 0 (zero) is absolute and followed by **',<left>,<top>'** '%JB<alignment of bitmap/picture 0-9>' = As shown the above telephone keypad alignment chart BUT the 0 (zero) is absolute and followed by **',<left>,<top>'** '%JI<alignment of icon 0-9>' = As shown the above telephone keypad alignment chart, **BUT** the 0 (zero) is absolute and followed by **',<left>,<top>'** *For some of these commands and values, refer to* theRGB Values for all 88 Basic Colors table on page 79. '%CF<on fill color>' = Set Fill Color. '%CB<on border color>' = Set Border Color. '%CT<on text color>' = Set Text Color. '%SW<1 or 0>' = Show/hide a button. '%SO<sound>' = Set the button sound. '%EN<1 or 0>' = Enable/disable a button. '%WW<1 or 0>' = Word wrap On/Off. '%GH<bargraph hi>' = Set the bargraph upper limit. '%GL<bargraph low>' = Set the bargraph lower limit. '%GN<bargraph slider name>' = Set the bargraph slider name/Joystick cursor name. '%GC<bargraph slider color>' = Set the bargraph slider color/Joystick cursor color.

"^" Button Commands (Cont.)	
^BMF (Cont.)	'%GI<bargraph invert>' = Set the bargraph invert/noninvert or joystick coordinate (0,1,2,3). See the ^GIV command on page 96 for more information. '%GU<bargraph ramp up>' = Set the bargraph ramp up time in intervals of 1/10 second. '%GD<bargraph ramp down>' = Set the bargraph ramp down time in 1/10 second. '%GG<bargraph drag increment> = Set the bargraph drag increment. Refer to the ^GDI command on page 96 for more information. '%OT<feedback type>' = Set the Feedback (Output) Type to one of the following: None, Channel,Invert, ON (Always ON), Momentary, or Blink. '%SM' = Submit a text for text area button. '%SF<1 or 0>' = Set the focus for text area button. '%OP<0-255>' = Set the button opacity to either Invisible (value=0) or Opaque (value=255). '%OP#<00-FF>' = Set the button opacity to either Invisible (value=00) or Opaque (value=FF). '%UN<Unicode text>' = Set the Unicode text. See the^*UNI* section on page 101 for the text format. '%EF<text effect name>' = Set the text effect. '%EC<text effect color>' = Set the text effect color. '%ML<max length>' = Set the maximum length of a text area. '%MK<input mask>' = Set the input mask of a text area. '%VL<0-1>' = Log-On/Log-Off the computer control connection '%VN<network name>' = Set network connection name. '%VP<password>' = Set the network connection password. Example: `SEND_COMMAND Panel,"'^BMF-500,1,%B10%CFRed%CB Blue %CTBlack%Ptest.png'"` Sets the button OFF state as well as the Border, Fill Color, Border Color, Text Color, and Bitmap.

"^" Button Commands (Cont.)	

^BMI	Mask image is used to crop a borderless button to a non-square shape. This is typically used with a bitmap.
	Syntax:
	`"'^BMI-<vt addr range>,<button states range>,<mask image>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	mask image = Graphic file used.
	Example:
	`SEND_COMMAND Panel,"'^BMI-530,1&2,newMac.png'"`
	Sets the button with variable text 530 ON/OFF state mask image to 'newmac.png'.
	
	'"^BMI-<variable text address range>,<button states range>,<mask image>"'
	Set the Chameleon Image button property. See Working With Chameleon Images in TPD4 Help.
	Note: If the Border Style properties is set to something other than 'None', no visible change will occur. Setting the Border Style to 'None' via ^BOR or ^BMF..%B will reveal the Chameleon image.
	Syntax:
	`SEND_COMMAND <DEV>,"'^BMI-<vt addr range>,<button states range>,<mask image>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons
	(0 = All states, for General buttons 1 = Off state and 2 = On state).
	mask image = Chameleon used.
	Example:
	`SEND_COMMAND Panel,"'^BMI-530,1&2,newMac.png'"`
	Sets the button with variable text 530 ON/OFF state mask image to 'newmac.png'.
	ewmac.png'.

^BML	Set the maximum length of the text area button. If this value is set to zero (0) there is no max length. The maximum length available is 2000.
	This is only for a Text area input button and not for a Text area input masking button.
	Syntax:
	`"'^BML-<vt addr range>,<max length>'"`
	Variable:
	variable text address range = 1 - 4000.
	max length = 2000 (0=no max length).
	Example:
	`SEND_COMMAND Panel,"'^BML-500,20'"`
	Sets the maximum length of the text area input button to 20 characters.

"^" Button Commands (Cont.)	

^BMP	Assign a picture to those buttons with a defined address range.
	Syntax:
	`"'^BMP-<vt addr range>,<button states range>,<name of bitmap/ picture>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	name of bitmap/picture = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BMP-500.504&510.515,1,bitmap.png'"`
	Sets the OFF state picture for the buttons with variable text ranges of 500-504 & 510-515.

^BNC	Clear current TakeNote annotations.
	Syntax:
	`"'^BNC-<vt addr range>,<command value>'"`
	Variable:
	variable text address range = 1 - 4000.
	command value = (0= clear, 1= clear all).
	Example:
	`SEND_COMMAND Panel,"'^BNC-973,0'"`
	Clears the annotation of the TakeNote button with variable text 973.

^BNN	Set the TakeNote network name for the specified Addresses.
	Syntax:
	`"'^BNN-<vt addr range>,<network name>'"`
	Variable:
	variable text address range = 1 - 4000.
	network name = Use a valid IP Address.
	Example:
	`SEND_COMMAND Panel,"'^BNN-973,192.168.169.99'"`
	Sets the TakeNote button network name to 192.168.169.99.

^BNT	Set the TakeNote network port for the specified Addresses.
	Syntax:
	`"'^BNT-<vt addr range>,<network port>'"`
	Variable:
	variable text address range = 1 - 4000.
	network port = 1 - 65535.
	Example:
	`SEND_COMMAND Panel,"'^BNT-973,5000'"`
	Sets the TakeNote button network port to 5000.

"^" Button Commands (Cont.)	

^BOP	Set the button opacity. The button opacity can be specified as a decimal between 0 - 255, where zero (0) is invisible and 255 is opaque, or as a HEX code, as used in the color commands by preceding the HEX code with the # sign. In this case, #00 becomes invisible and #FF becomes opaque.
	If the opacity is set to zero (0), this does not make the button inactive, only invisible.
	Syntax:
	`"'^BOP-<vt addr range>,<button states range>,<button opacity>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	button opacity = 0 (invisible) - 255 (opaque).
	Example:
	`SEND_COMMAND Panel,"'^BOP-500.504&510.515,1,200'"`
	Example 2:
	`SEND_COMMAND Panel,"'^BOP-500.504&510.515,1,#C8'"`
	Both examples set the opacity of the buttons with the variable text range of 500-504 and 510-515 to 200.

^BOR	Set a border to a specific border style associated with a border value for those buttons with a defined address range. Refer to theBorder Styles and Programming Numbers table on page 80 for more information.
	Syntax:
	`"'^BOR-<vt addr range>,<border style name or border value>'"`
	Variable:
	variable text address range = 1 - 4000.
	border style name = Refer to the Border Styles and Programming Numbers table on page 80.
	border value = 0 - 41.
	Examples:
	`SEND_COMMAND Panel,"'^BOR-500.504&510.515,10'"`
	Sets the border by number (#10) to those buttons with the variable text range of 500-504 & 510-515.
	`SEND_COMMAND Panel,"'^BOR-500.504&510,AMX Elite -M'"`
	Sets the border by name (AMX Elite) to those buttons with the variable text range of 500-504 & 510-515.
	***Note**: The border style is available through the TPDesign4 border-style drop-down list. Refer to theTPD4 Border Styles by Name table on page 81 for more information.*

^BPP	Set or clear the protected page flip flag of a button.
	Zero clears the flag.
	Syntax:
	`"'^BPP-<vt addr range>,<protected page flip flag value>'"`
	Variable:
	variable text address range = 1 - 4000.
	protected page flip flag value range = 0 - 4 (**0 clears the flag**).
	Example:
	`SEND_COMMAND Panel,"'^BPP-500,1'"`
	Sets the button to protected page flip flag 1 (sets it to password 1).

"^" Button Commands (Cont.)	

^BRD	Set the border of a button state/states.*Only if the specified border is not the same as the current border.*
	The border names are available through the TPDesign4 border-name drop-down list.
	Syntax:
	`"'^BRD-<vt addr range>,<button states range>,<border name>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	border name = Refer toBorder Styles and Programming Numbers table on page 80.
	Example:
	`SEND_COMMAND Panel,"'^BRD-500.504&510.515,1&2,Quad Line'"`
	Sets the border by name (Quad Line) to those buttons with the variable text range of 500-504 & 510-515.
	Refer to theTPD4 Border Styles by Name table on page 81.

^BSF	Set the focus to the text area.
	***Note**: Select one button at a time (single variable text address). Do not assign a variable text address range to set focus to multiple buttons. Only one variable text address can be in focus at a time.*
	Syntax:
	`"'^BSF-<vt addr range>,<selection value>'"`
	Variable:
	variable text address range = 1 - 4000.
	selection value = Unselect = 0 and select = 1.
	Example:
	`SEND_COMMAND Panel,"'^BSF-500,1'"`
	Sets the focus to the text area of the button.

^BSM	Submit text for text area buttons. This command causes the text areas to send their text as strings to the NetLinx Master.
	Syntax:
	`"'^BSM-<vt addr range>'"`
	Variable:
	variable text address range = 1 - 4000.
	Example:
	`SEND_COMMAND Panel,"'^BSM-500'"`
	Submits the text of the text area button.

^BSO	Set the sound played when a button is pressed. If the sound name is blank the sound is then cleared. If the sound name is not matched, the button sound is not changed.
	Syntax:
	`"'^BSO-<vt addr range>,<button states range>,<sound name>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	sound name = (**blank** - sound cleared, **not matched** - button sound not changed).
	Example:
	`SEND_COMMAND Panel,"'^BSO-500,1&2,music.wav'"`
	Assigns the sound 'music.wav' to the button Off/On states.

"^" Button Commands (Cont.)	

^BVL	Log-On/Log-Off the computer control connection.
	Syntax:
	`"'^BVL-<vt addr range>,<connection>'"`
	Variable:
	variable text address range = 1 - 4000.
	connection = 0 (Log-Off connection) and 1 (Log-On connection).
	Example:
	`SEND_COMMAND Panel,"'^BVL-500,0'"`
	Logs-off the computer control connection of the button.

^BVN	Set the computer control remote host for the specified address.
	Syntax:
	`SEND_COMMAND <DEV>,"'^BVN-<vt addr range>,<remote host>'"`
	Variables:
	variable text address range = 1 - 4000.
	remote host = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BVN-500,191.191.191.191'"`
	Sets the remote host to '191.191.191.191' for the specific computer control button.

^BVP	Set the network password for the specified address.
	Syntax:
	`"'^BVP-<vt addr range>,<network password>'"`
	Variable:
	variable text address range = 1 - 4000.
	network password = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BVP-500,PCLOCK'"`
	Sets the password to PCLOCK for the specific PC control button.

^BVT	Set the computer control network port for the specified address.
	Syntax:
	`"'^BVT-<vt addr range>,<network port>'"`
	Variable:
	variable text address range = 1 - 4000.
	network port = 1 - 65535.
	Example:
	`SEND_COMMAND Panel,"'^BVT-500,5000'"`
	Sets the network port to 5000.

^BWW	Set the button word wrap feature to those buttons with a defined address range.
	By default, word-wrap is Off.
	Syntax:
	`"'^BWW-<vt addr range>,<button states range>,<word wrap>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	word wrap = (0=Off and 1=On). Default is Off.
	Example:
	`SEND_COMMAND Panel,"'^BWW-500,1,1'"`
	Sets the word wrap on for the button's Off state.

"^" Button Commands (Cont.)	

^CPF	Clear all page flips from a button.
	Syntax:
	`"'^CPF-<vt addr range>'"`
	Variable:
	variable text address range = 1 - 4000.
	Example:
	`SEND_COMMAND Panel,"'^CPF-500'"`
	Clears all page flips from the button.

^DPF	Delete page flips from button if it already exists.
	Syntax:
	`"'^DFP-<vt addr range>,<actions>,<page name>'"`
	Variable:
	variable text address range = 1 - 4000.
	actions =
	Stan[dardPage] - Flip to standard page
	Prev[iousPage] - Flip to previous page
	Show[Popup] - Show Popup page
	Hide[Popup] - Hide Popup page
	Togg[lePopup] - Toggle popup state
	ClearG[roup] - Clear popup page group from all pages
	ClearP[age] - Clear all popup pages from a page with the specified page name
	ClearA[ll] - Clear all popup pages from all pages
	page name = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'^DPF-409,Prev'"`
	Deletes the assignment of a button from flipping to a previous page.

^ENA	Enable or disable buttons with a set variable text range.
	Syntax:
	`"'^ENA-<vt addr range>,<command value>'"`
	Variable:
	variable text address range = 1 - 4000.
	command value = (0= disable, 1= enable)
	Example:
	`SEND_COMMAND Panel,"'^ENA-500.504&510.515,0'"`
	Disables button pushes on buttons with variable text range 500-504 & 510-515.

^FON	Set a font to a specific Font ID value for those buttons with a defined address range.
	***Note**: The Font ID is generated by TPD4 and is located in TPD4 through the Main menu. Panel > Generate Programmer's Report >Text Only Format >Readme.txt.Syntax:*
	`"'^FON-<vt addr range>,<button states range>,<font value>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	font value = Range = 1 - XXX. Refer to theDefault Font Styles and ID Numbers table on page 80.
	Example:
	`SEND_COMMAND Panel,"'^FON-500.504&510.515,1&2,4'"`
	Sets the font size to font ID #4 for the On and Off states of buttons with the variable text range of 500-504 & 510-515.

"^" Button Commands (Cont.)	

^GDI	Change the bargraph drag increment.
	Syntax:
	`"'^GDI-<vt addr range>,<bargraph drag increment>'"`
	Variable:
	variable text address range = 1 - 4000.
	bargraph drag increment = The default drag increment is 256.
	Example:
	`SEND_COMMAND Panel,"'^GDI-7,128'"`
	Sets the bargraph with variable text 7 to a drag increment of 128.

^GIV	Invert the joystick axis to move the origin to another corner. Parameters 1,2, and 3 will cause a bargraph or slider to be inverted regardless of orientation. Their effect will be as described for joysticks.
	Syntax:
	`"'^GIV-<vt addr range>,<joystick axis to invert>'"`
	Variable:
	variable text address range = 1 - 4000.
	joystick axis to invert = 0 - 3.
	0 1
	2 3
	0 = Normal
	1 = Invert horizontal axis
	2 = Invert vertical axis
	3 = Invert both axis locations
	For a bargraph 1 = Invert , 0 = Non Invert
	Example:
	`SEND_COMMAND Panel,"'^GIV-500,3'"`
	Inverts the joystick axis origin to the bottom right corner.

^GLH	Change the bargraph upper limit.
	Syntax:
	`"'^GLH-<vt addr range>,<bargraph hi>'"`
	Variable:
	variable text address range = 1 - 4000.
	bargraph limit range = 1 - 65535 (*bargraph upper limit range*).
	Example:
	`SEND_COMMAND Panel,"'^GLH-500,1000'"`
	Changes the bargraph upper limit to 1000.

^GLL	Change the bargraph lower limit.
	Syntax:
	`"'^GLL-<vt addr range>,<bargraph low>'"`
	Variable:
	variable text address range = 1 - 4000.
	bargraph limit range = 1 - 65535 (*bargraph lower limit range*).
	Example:
	`SEND_COMMAND Panel,"'^GLL-500,150'"`
	Changes the bargraph lower limit to 150.

^GRD	Change the bargraph ramp-down time in 1/10th of a second.
	Syntax:
	`"'^GRD-<vt addr range>,<bargraph ramp down time>'"`
	Variable:
	variable text address range = 1 - 4000.
	bargraph ramp down time = In 1/10th of a second intervals.
	Example:
	`SEND_COMMAND Panel,"'^GRD-500,200'"`
	Changes the bargraph ramp down time to 20 seconds.

<table>
<tr><th colspan="2">"^" Button Commands (Cont.)</th></tr>
<tr><td>^GRU</td><td>Change the bargraph ramp-up time in 1/10th of a second.
Syntax:
"'^GRU-<vt addr range>,<bargraph ramp up time>'"
Variable:
variable text address range = 1 - 4000.
bargraph ramp up time = In 1/10th of a second intervals.
Example:
SEND_COMMAND Panel,"'^GRU-500,100'"
Changes the bargraph ramp up time to 10 seconds.</td></tr>
<tr><td>^GSC</td><td>Change the bargraph slider color or joystick cursor color.
Note: Colors can be set by Color Numbers, Color name, R,G,B,alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB). Refer to the RGB Values for all 88 Basic Colors table on page 79.
Syntax:
"'^GSC-<vt addr range>,<color value>'"
Variable:
variable text address range = 1 - 4000.
color value = Refer to the RGB Values for all 88 Basic Colors table on page 79.
Example:
SEND_COMMAND Panel,"'^GSC-500,12'"
Changes the bargraph or joystick slider color to Yellow.</td></tr>
<tr><td>^GSN</td><td>Change the bargraph slider name or joystick cursor name. Slider names and cursor names can be found in the TPDesign4 slider name and cursor drop-down list.
Syntax:
"'^GSN-<vt addr range>,<bargraph slider name>'"
Variable:
variable text address range = 1 - 4000.
bargraph slider name = See table below.
<table><tr><td colspan="3">Bargraph Slider Names:</td></tr><tr><td>None</td><td>Ball</td><td>Circle -L</td></tr><tr><td>Circle -M</td><td>Circle -S</td><td>Precision</td></tr><tr><td>Rectangle -L</td><td>Rectangle -M</td><td>Rectangle -S</td></tr><tr><td>Windows</td><td>Windows Active</td><td></td></tr><tr><td colspan="3">Joystick Cursor Names:</td></tr><tr><td>None</td><td>Arrow</td><td>Ball</td></tr><tr><td>Circle</td><td>Crosshairs</td><td>Gunsight</td></tr><tr><td>Hand</td><td>Metal</td><td>Spiral</td></tr><tr><td>Target</td><td>View Finder</td><td></td></tr></table>Example:
SEND_COMMAND Panel,"'^GSN-500,Ball'"
Changes the bargraph slider name or the Joystick cursor name to 'Ball'.</td></tr>
</table>

"^" Button Commands (Cont.)	

^ICO	Set the icon to a button.
	Syntax:
	`"'^ICO-<vt addr range>,<button states range>,<icon index>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	icon index range = 0 - 9900 (**a value of 0 is clear**).
	Example:
	`SEND_COMMAND Panel,"'^ICO-500.504&510.515,1&2,1'"`
	Sets the icon for On and Off states for buttons with variable text ranges of 500-504 & 510-515.

^JSB	Set bitmap/picture alignment using a numeric keypad layout for those buttons with a defined address range. The alignment of 0 is followed by ',<left>,<top>'.
	The left and top coordinates are relative to the upper left corner of the button.
	Syntax:
	`"'^JSB-<vt addr range>,<button states range>,<new text alignment>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	new text alignment = Value of 1 - 9 corresponds to the following locations:
	0
	1 2 3
	4 5 6
	7 8 9
	Zero can be used for an absolute position
	Example:
	`SEND_COMMAND Panel,"'^JSB-500.504&510.515,1&2,1'"`
	Sets the off/on state picture alignment to upper left corner for those buttons with variable text ranges of 500-504 & 510-515.

^JSI	Set icon alignment using a numeric keypad layout for those buttons with a defined address range. The alignment of 0 is followed by ',<left>,<top>'.
	The left and top coordinates are relative to the upper left corner of the button.
	Syntax:
	`"'^JSI-<vt addr range>,<button states range>,<new icon alignment>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	new icon alignment = Value of 1 - 9 corresponds to the following locations:
	0
	1 2 3
	4 5 6
	7 8 9
	Zero can be used for an absolute position
	Example:
	`SEND_COMMAND Panel,"'^JSI-500.504&510.515,1&2,1'"`
	Sets the Off/On state icon alignment to upper left corner for those buttons with variable text range of 500-504 & 510-515.

"^" Button Commands (Cont.)	

^JST	Set text alignment using a numeric keypad layout for those buttons with a defined address range. The alignment of 0 is followed by ',<left>,<top>'.
	The left and top coordinates are relative to the upper left corner of the button.
	Syntax:
	`"'^JST-<vt addr range>,<button states range>,<new text alignment>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	new text alignment = Value of 1 - 9 corresponds to the following locations:
	0
	1 2 3
	4 5 6
	7 8 9
	Zero can be used for an absolute position
	Example:
	`SEND_COMMAND Panel,"'^JST-500.504&510.515,1&2,1'"`
	Sets the text alignment to the upper left corner for those buttons with variable text ranges of 500-504 & 510-515.

^MBT	Set the Mouse Button mode On for the virtual PC.
	Syntax:
	`"'^MBT-<pass data>'"`
	Variable:
	pass data:
	0 = None
	1 = Left
	2 = Right
	3 = Middle
	Example:
	`SEND COMMAND Panel,"'^MBT-1'"`
	Sets the mouse button mode to 'Left Mouse Click'.

^MDC	Turn On the 'Mouse double-click' feature for the virtual PC.
	Syntax:
	`"'^MDC'"`
	Example:
	`SEND COMMAND Panel,"'^MDC'"`
	Sets the mouse double-click for use with the virtual PC.

^SHO	Show or hide a button with a set variable text range.
	Syntax:
	`"'^SHO-<vt addr range>,<command value>'"`
	Variable:
	variable text address range = 1 - 4000.
	command value = (0= hide, 1= show).
	Example:
	`SEND_COMMAND Panel,"'^SHO-500.504&510.515,0'"`
	Hides buttons with variable text address range 500-504 & 510-515.

"^" Button Commands (Cont.)	

^TEC	Set the text effect color for the specified addresses/states to the specified color. The Text Effect is specified by name and can be found in TPD4.
	***Note**: Colors can be set by Color Numbers, Color name, R,G,B,alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB). Refer to the RGB Values for all 88 Basic Colors table on page 79.*
	Syntax:
	`"'^TEC-<vt addr range>,<button states range>,<color value>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	color value = Refer to theRGB Values for all 88 Basic Colors table on page 79.
	Example:
	`SEND_COMMAND Panel,"'^TEC-500.504&510.515,1&2,12'"`
	Sets the text effect color to Very Light Yellow on buttons with variable text 500-504 and 510-515.

^TEF	Set the text effect. The Text Effect is specified by name and can be found in TPD4.
	Syntax:
	`"'^TEF-<vt addr range>,<button states range>,<text effect name>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	text effect name = **Refer to theText Effects table on page 101 for a listing of text effect names**.
	Example:
	`SEND_COMMAND Panel,"'^TEF-500.504&510.515,1&2,Soft Drop Shadow 3'"`
	Sets the text effect to Soft Drop Shadow 3 for the button with variable text range 500-504 and 510-515.

^TOP Enables/disables touch output to Master	If enabled, Press/Move/Release events are sent to the Master as string events. Syntax: `"'^TOP-<state>'"` <state> is 0(disable) 1(presses/releases), 2(moves), 3(press/move/release). **Note:** Move should be used with caution. This setting can generate a significant amount of traffic to the master depending on user interaction. Example command: '"^TOP-1"' Example Response: "String Event: Text: Press,320,480" Example Response: "String Event: Text: Release,320,480"

^TXT	Assign a Non-Unicode text string to those buttons with a defined address range.
	Syntax:
	`"'^TXT-<vt addr range>,<button states range>,<new text>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	new text = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^TXT-500.504&510.515,1&2,Test Only'"`
	Sets the On and Off state text for buttons with the variable text ranges of 500-504 & 510-515.

"^" Button Commands (Cont.)	

^UNI	Set Unicode text. For the ^UNI command (%UN and ^BMF command), the Unicode text is sent as ASCII-HEX nibbles.
	Syntax:
	`"'^UNI-<vt addr range>,<button states range>,<unicode text>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	unicode text = Unicode HEX value.
	Example:
	`SEND_COMMAND Panel,"'^UNI-500,1,0041'"`
	Sets the button's unicode character to 'A'.
	***Note**: To send the variable text 'A' in unicode to all states of the variable text button 1, (for which the character code is 0041 Hex), send the following command:*
	`SEND_COMMAND TP,"'^UNI-1,0,0041'"`
	***Note**: Unicode is always represented in a HEX value. TPD4 generates (through the Text Enter Box dialog) unicode HEX values. Refer to the TPDesign4 Instruction Manual for more information.*

Text Effect Names

The following is a listing of text effects names. This list is associated with the **^TEF** command on page 100.

Text Effects			
• Glow -S	• Soft Drop Shadow 1	• Medium Drop Shadow 1	• Hard Drop Shadow 1
• Glow -M	• Soft Drop Shadow 2	• Medium Drop Shadow 2	• Hard Drop Shadow 2
• Glow -L	• Soft Drop Shadow 3	• Medium Drop Shadow 3	• Hard Drop Shadow 3
• Glow -X	• Soft Drop Shadow 4	• Medium Drop Shadow 4	• Hard Drop Shadow 4
• Outline -S	• Soft Drop Shadow 5	• Medium Drop Shadow 5	• Hard Drop Shadow 5
• Outline -M	• Soft Drop Shadow 6	• Medium Drop Shadow 6	• Hard Drop Shadow 6
• Outline -L	• Soft Drop Shadow 7	• Medium Drop Shadow 7	• Hard Drop Shadow 7
• Outline -X	• Soft Drop Shadow 8	• Medium Drop Shadow 8	• Hard Drop Shadow 8
	• Soft Drop Shadow 1 with outline	• Medium Drop Shadow 1 with outline	
	• Soft Drop Shadow 2 with outline	• Medium Drop Shadow 2 with outline	
	• Soft Drop Shadow 3 with outline	• Medium Drop Shadow 3 with outline	
	• Soft Drop Shadow 4 with outline	• Medium Drop Shadow 4 with outline	
	• Soft Drop Shadow 5 with outline	• Medium Drop Shadow 5 with outline	
	• Soft Drop Shadow 6 with outline	• Medium Drop Shadow 6 with outline	
	• Soft Drop Shadow 7 with outline	• Medium Drop Shadow 7 with outline	
	• Soft Drop Shadow 8 with outline	• Medium Drop Shadow 8 with outline	

Button Query Commands

Button Query commands reply with a custom event. Each button/state combination has one custom event. Each query is assigned a unique custom event type.

The following example is for debug purposes only:

```
NetLinx Example: CUSTOM_EVENT[device, Address, Custom event type]

DEFINE_EVENT
CUSTOM_EVENT[TP,529,1001]      // Text
CUSTOM_EVENT[TP,529,1002]      // Bitmap
CUSTOM_EVENT[TP,529,1003]      // Icon
CUSTOM_EVENT[TP,529,1004]      // Text Justification
CUSTOM_EVENT[TP,529,1005]      // Bitmap Justification
CUSTOM_EVENT[TP,529,1006]      // Icon Justification
CUSTOM_EVENT[TP,529,1007]      // Font
CUSTOM_EVENT[TP,529,1008]      // Text Effect Name
CUSTOM_EVENT[TP,529,1009]      // Text Effect Color
CUSTOM_EVENT[TP,529,1010]      // Word Wrap
CUSTOM_EVENT[TP,529,1011]      // ON state Border Color
CUSTOM_EVENT[TP,529,1012]      // ON state Fill Color
CUSTOM_EVENT[TP,529,1013]      // ON state Text Color
CUSTOM_EVENT[TP,529,1014]      // Border Name
CUSTOM_EVENT[TP,529,1015]      // Opacity

{
   SEND_STRING 0,"'ButtonGet Id=',ITOA(CUSTOM.ID),' Type=',ITOA(CUSTOM.TYPE)"
   SEND_STRING 0,"'Flag   =',ITOA(CUSTOM.FLAG)"
   SEND_STRING 0,"'VALUE1 =',ITOA(CUSTOM.VALUE1)"
   SEND_STRING 0,"'VALUE2 =',ITOA(CUSTOM.VALUE2)"
   SEND_STRING 0,"'VALUE3 =',ITOA(CUSTOM.VALUE3)"
   SEND_STRING 0,"'TEXT   =',CUSTOM.TEXT"
   SEND_STRING 0,"'TEXT LENGTH =',ITOA(LENGTH_STRING(CUSTOM.TEXT))"
}
```

All custom events have the following 6 fields:

Custom Event Fields	
Field	Description
Uint Flag	0 means text is a standard string, 1 means Unicode encoded string
slong value1	button state number
slong value2	actual length of string (this is not encoded size)
slong value3	index of first character (usually 1 or same as optional index
string text	the text from the button
text length (string encode)	button text length

These fields are populated differently for each query command. The text length (*String Encode*) field is not used in any command.

Button Query Commands	

?BCB	Get the current border color.
	Syntax:
	`"'?BCB-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1011:**
	Flag - zero
	Value1 - Button state number
	Value2 - Actual length of string (should be 9)
	Value3 - Zero
	Text - Hex encoded color value (ex: #000000FF)
	Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BCB-529,1'"`
	Gets the button 'OFF state' border color. information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1011`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #222222FF`
	`TEXT LENGTH = 9`

?BCF	Get the current fill color.
	Syntax:
	`"'?BCF-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1012:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string (should be 9)
	Value3 - Zero
	Text - Hex encoded color value (ex: #000000FF)
	Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BCF-529,1'"`
	Gets the button 'OFF state' fill color information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1012`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #FF8000FF`
	`TEXT LENGTH = 9`

Button Query Commands (Cont.)	

?BCT	Get the current text color.
	Syntax:
	`"'?BCT-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1013:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string (should be 9)
	Value3 - Zero
	Text - Hex encoded color value (ex: #000000FF)
	Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BCT-529,1'"`
	Gets the button 'OFF state' text color information.
	The result sent to Master would be:
	`ButtonGet Id = 529 Type = 1013`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #FFFFFEFF`
	`TEXT LENGTH = 9`

?BMP	Get the current bitmap name.
	Syntax:
	`"'?BMP-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1002:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string
	Value3 - Zero
	Text - String that represents the bitmap name
	Text length - Bitmap name text length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BMP-529,1'"`
	Gets the button 'OFF state' bitmap information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1002`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = Buggs.png`
	`TEXT LENGTH = 9`

Button Query Commands (Cont.)	

?BOP	Get the overall button opacity.
	Syntax:
	`"'?BOP-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1015:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Opacity
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?BOP-529,1'"`
	Gets the button 'OFF state' opacity information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1015`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 200`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

?BRD	Get the current border name.
	Syntax:
	`"'?BRD-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1014:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string
	Value3 - Zero
	Text - String that represents border name
	Text length - Border name length
	Example:
	`SEND COMMAND Panel,"'?BRD-529,1'"`
	Gets the button 'OFF state' border information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1014`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 22`
	`VALUE3 = 0`
	`TEXT = Double Bevel Raised -L`
	`TEXT LENGTH = 22`

Button Query Commands (Cont.)	

?BWW	Get the current word wrap flag status.
	Syntax:
	`"'?BWW-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1010:**
	Flag - Zero
	Value1 - Button state number
	Value2 - 0 = no word wrap, 1 = word wrap
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?BWW-529,1'"`
	Gets the button 'OFF state' word wrap flag status information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1010`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 1`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

?FON	Get the current font index.
	Syntax:
	`"'?FON-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1007:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Font index
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?FON-529,1'"`
	Gets the button 'OFF state' font type index information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1007`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 72`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

Button Query Commands (Cont.)	

?ICO	Get the current icon index.
	Syntax:
	`"'?ICO-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1003:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Icon Index
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?ICO-529,1&2'"`
	Gets the button 'OFF state' icon index information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1003`
	`Flag = 0`
	`VALUE1 = 2`
	`VALUE2 = 12`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

?JSB	Get the current bitmap justification.
	Syntax:
	`"'?JSB-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1005:**
	Flag - Zero
	Value1 - Button state number
	Value2 - 1 - 9 justify
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?JSB-529,1'"`
	Gets the button 'OFF state' bitmap justification information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1005`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 5`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

Button Query Commands (Cont.)	

?JSI	Get the current icon justification.
	Syntax:
	`"'?JSI-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1006:**
	Flag - Zero
	Value1 - Button state number
	Value2 - 1 - 9 justify
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?JSI-529,1'"`
	Gets the button 'OFF state' icon justification information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1006`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 6`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

?JST	Get the current text justification.
	Syntax:
	`"'?JST-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1004:**
	Flag - Zero
	Value1 - Button state number
	Value2 - 1 - 9 justify
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?JST-529,1'"`
	Gets the button 'OFF state' text justification information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1004`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 1`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

Button Query Commands (Cont.)	

?TEC	Get the current text effect color.
	Syntax:
	`"'?TEC-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1009:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string (should be 9)
	Value3 - Zero
	Text - Hex encoded color value (ex: #000000FF)
	Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?TEC-529,1'"`
	Gets the button 'OFF state' text effect color information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1009`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #5088F2AE`
	`TEXT LENGTH = 9`

?TEF	Get the current text effect name.
	Syntax:
	`"'?TEF-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1008:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string
	Value3 - Zero
	Text - String that represents the text effect name
	Text length - Text effect name length
	Example:
	`SEND COMMAND Panel,"'?TEF-529,1'"`
	Gets the button 'OFF state' text effect name information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1008`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 18`
	`VALUE3 = 0`
	`TEXT = Hard Drop Shadow 3`
	`TEXT LENGTH = 18`

Button Query Commands (Cont.)	

?TXT	Get the current text information.
	Syntax:
	`"'?TXT-<vt addr range>,<button states range>,<optional index>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	optional index = This is used if a string was too long to get back in one command. The reply will start at this index.
	custom event type **1001:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string
	Value3 - Index
	Text - Text from the button
	Text length - Button text length
	Example:
	`SEND COMMAND Panel,"'?TXT-529,1'"`
	Gets the button 'OFF state' text information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1001`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 14`
	`VALUE3 = 1`
	`TEXT = This is a test`
	`TEXT LENGTH = 14`

Panel Runtime Operations

Serial Commands are used in the AxcessX Terminal Emulator mode. These commands are case insensitive.

Panel Runtime Operation Commands	

ABEEP	Output a single beep even if beep is Off.
	Syntax:
	`"'ABEEP'"`
	Example:
	`SEND COMMAND Panel,"'ABEEP'"`
	Outputs a beep of duration 1 beep even if beep is Off.

ADBEEP	Output a double beep even if beep is Off.
	Syntax:
	`"'ADBEEP'"`
	Example:
	`SEND COMMAND Panel,"'ADBEEP'"`
	Outputs a double beep even if beep is Off.

Panel Runtime Operation Commands (Cont.)	

@AKB	Pop up the keyboard icon and initialize the text string to that specified.
	Keyboard string is set to null on power up and is stored until power is lost.
	The Prompt Text is optional.
	Syntax:
	`"'@AKB-<initial text>;<prompt text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@AKB-Texas;Enter State'"`
	Pops up the Keyboard and initializes the text string 'Texas' with prompt text 'Enter State'.

AKEYB	Pop up the keyboard icon and initialize the text string to that specified.
	Keyboard string is set to null on power up and is stored until power is lost.
	Syntax:
	`"'AKEYB-<initial text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'AKEYB-This is a Test'"`
	Pops up the Keyboard and initializes the text string 'This is a Test'.

AKEYP	Pop up the keypad icon and initialize the text string to that specified.
	The keypad string is set to null on power up and is stored until power is lost.
	Syntax:
	`"'AKEYP-<number string>'"`
	Variables:
	`number string = 0 - 9999.`
	Example:
	`SEND COMMAND Panel,"'AKEP-12345'"`
	Pops up the Keypad and initializes the text string '12345'.

AKEYR	Remove the Keyboard/Keypad.
	Remove keyboard or keypad that was displayed using 'AKEYB', 'AKEYP', 'PKEYP', @AKB, @AKP, @PKP, @EKP, or @TKP commands.
	Syntax:
	`"'AKEYR'"`
	Example:
	`SEND COMMAND Panel,"'AKEYR'"`
	Removes the Keyboard/Keypad.

@AKP	Pop up the keypad icon and initialize the text string to that specified.
	Keypad string is set to null on power up and is stored until power is lost.
	The Prompt Text is optional.
	Syntax:
	`"'@AKP-<initial text>;<prompt text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@AKP-12345678;ENTER PASSWORD'"`
	Pops up the Keypad and initializes the text string '12345678' with prompt text 'ENTER PASSWORD'.

Panel Runtime Operation Commands (Cont.)	

@AKR	Remove the Keyboard/Keypad.
	Remove keyboard or keypad that was displayed using 'AKEYB', 'AKEYP', 'PKEYP', @AKB, @AKP, @PKP, @EKP, or @TKP commands.
	Syntax:
	`"'@AKR'"`
	Example:
	`SEND COMMAND Panel,"'@AKR'"`
	Removes the Keyboard/Keypad.

BEEP	Output a beep.
	Syntax:
	`"'BEEP'"`
	Example:
	`SEND COMMAND Panel,"'BEEP'"`
	Outputs a beep.

BRIT	Set the panel brightness.
	Syntax:
	`"'BRIT-<brightness level>'"`
	Variable:
	brightness level = 0 - 100.
	Example:
	`SEND COMMAND Panel,"'BRIT-50'"`
	Sets the brightness level to 50.

@BRT	Set the panel brightness.
	Syntax:
	`"'@BRT-<brightness level>'"`
	Variable:
	brightness level = 0 - 100.
	Example:
	`SEND COMMAND Panel,"'@BRT-70'"`
	Sets the brightness level to 70.

DBEEP	Output a double beep.
	Syntax:
	`"'DBEEP'"`
	Example:
	`SEND COMMAND Panel,"'DBEEP'"`
	Outputs a double beep.

@EKP	Extend the Keypad.
	Pops up the keypad icon and initializes the text string to that specified.
	The Prompt Text is optional.
	Syntax:
	`"'@EKP-<initial text>;<prompt text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@EKP-33333333;Enter Password'"`
	Pops up the Keypad and initializes the text string '33333333' with prompt text 'Enter Password'.

Panel Runtime Operation Commands (Cont.)	

PKEYP	Present a private keypad.
	Pops up the keypad icon and initializes the text string to that specified.
	Keypad displays a '*' instead of the numbers typed.
	The Prompt Text is optional.
	Syntax:
	`"'PKEYP-<initial text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'PKEYP-123456789'"`
	Pops up the Keypad and initializes the text string '123456789' in '*'.

@PKP	Present a private keypad.
	Pops up the keypad icon and initializes the text string to that specified.
	Keypad displays a '*' instead of the numbers typed.
	The Prompt Text is optional.
	Syntax:
	`"'@PKP-<initial text>;<prompt text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@PKP-1234567;ENTER PASSWORD'"`
	Pops up the Keypad and initializes the text string 'ENTER PASSWORD' in '*'.

SETUP	Send panel to SETUP page.
	Syntax:
	`"'SETUP'"`
	Example:
	`SEND COMMAND Panel,"'SETUP'"`
	Sends the panel to the Setup Page.

SLEEP	Force the panel into screen saver mode.
	Syntax:
	`"'SLEEP'"`
	Example:
	`SEND COMMAND Panel,"'SLEEP'"`
	Forces the panel into screen saver mode.

@SOU	Play a sound file.
	Syntax:
	`"'@SOU-<sound name>'"`
	Variables:
	`sound name = Name of the sound file. Supported sound file formats are: WAV & MP3.`
	Example:
	`SEND COMMAND Panel,"'@SOU-Music.wav'"`
	Plays the 'Music.wav' file.

Panel Runtime Operation Commands (Cont.)	

@TKP	Present a telephone keypad.
	Pops up the keypad icon and initializes the text string to that specified.
	The Prompt Text is optional.
	Syntax:
	`"'@TKP-<initial text>;<prompt text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@TKP-999.222.1211;Enter Phone Number'"`
	Pops-up the Keypad and initializes the text string '999.222.1211' with prompt text 'Enter Phone Number'.

TPAGEON	Turn On page tracking.
	This command turns On page tracking, whereby when the page or popups change, a string is sent to the Master.
	This string may be captured with a CREATE_BUFFER command for one panel and sent directly to another panel.
	Syntax:
	`"'TPAGEON'"`
	Example:
	`SEND COMMAND Panel,"'TPAGEON'"`
	Turns On page tracking.

TPAGEOFF	Turn Off page tracking.
	Syntax:
	`"'TPAGEOFF'"`
	Example:
	`SEND COMMAND Panel,"'TPAGEOFF'"`
	Turns Off page tracking.

@VKB	Popup the virtual keyboard.
	Syntax:
	`"'@VKB'"`
	Example:
	`SEND COMMAND Panel,"'@VKB'"`
	Pops-up the virtual keyboard.

WAKE	Force the panel out of screen saver mode.
	Syntax:
	`"'WAKE'"`
	Example:
	`SEND COMMAND Panel,"'WAKE'"`
	Forces the panel out of the screen saver mode.

Input Commands

These Send Commands are case insensitive.

Input Commands	

^CAL	Put panel in calibration mode.
	Syntax:
	`"'^CAL'"`
	Example:
	`SEND COMMAND Panel,"'^CAL'"`
	Puts the panel in calibration mode.

^KPS	Set the keyboard passthru.
	Syntax:
	`"'^KPS-<pass data>'"`
	Variable:
	pass data:
	<blank/empty> = Disables the keyboard.
	0 = Pass data to G4 application (default). This can be used with VPC or text areas.
	1 - 4 = Not used.
	5 = Sends out data to the Master.
	Example:
	`SEND COMMAND Panel,"'^KPS-5'"`
	Sets the keyboard passthru to the Master. Option 5 sends keystrokes directly to the Master via the Send Output String mechanism. This process sends a virtual keystroke command (^VKS) to the Master.
	Example 2:
	`SEND COMMAND Panel,"'^KPS-0'"`
	Disables the keyboard passthru to the Master.
	The following point defines how the parameters within this command work:
	• Accepts keystrokes from any of these sources: attached USB keyboard or Virtual keyboard.

^VKS	Send one or more virtual key strokes to the G4 application.
	Key presses and key releases are not distinguished except in the case of CTRL, ALT, and SHIFT.
	Refer to theEmbedded Codes table on page 116 that define special characters which can be included with the string but may not be represented by the ASCII character set.
	Syntax:
	`"'^VKS-<string>'"`
	Variable:
	string = Only 1 string per command/only one stroke per command.
	Example:
	`SEND COMMAND Panel,"'^VKS-'8"`
	Sends out the keystroke 'backspace' to the G4 application.

Embedded codes

The following is a list of G4-compatible embedded codes:

Embedded Codes		
Decimal numbers	Hexidecimal values	Virtual keystroke
8	($08)	Backspace
13	($0D)	Enter
27	($1B)	ESC
128	($80)	CTRL key down
129	($81)	ALT key down
130	($82)	Shift key down
131	($83)	F1
132	($84)	F2
133	($85)	F3
134	($86)	F4
135	($87)	F5
136	($88)	F6
137	($89)	F7
138	($8A)	F8
139	($8B)	F9
140	($8C)	F10
141	($8D)	F11
142	($8E)	F12
143	($8F)	Num Lock
144	($90)	Caps Lock
145	($91)	Insert
146	($92)	Delete
147	($93)	Home
148	($94)	End
149	($95)	Page Up
150	($96)	Page Down
151	($97)	Scroll Lock
152	($98)	Pause
153	($99)	Break
154	($9A)	Print Screen
155	($9B)	SYSRQ
156	($9C)	Tab
157	($9D)	Windows
158	($9E)	Menu
159	($9F)	Up Arrow
160	($A0)	Down Arrow
161	($A1)	Left Arrow
162	($A2)	Right Arrow
192	($C0)	CTRL key up
193	($C1)	ALT key up
194	($C2)	Shift key up

Panel Setup Commands

These commands are case insensitive.

Panel Setup Commands	

@PWD	Set the page flip password.
	***Note**: @PWD sets the level 1 password only.*
	Syntax:
	`"'@PWD-<page flip password>'"`
	Variables:
	`page flip password = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@PWD-Main'"`
	Sets the page flip password to 'Main'.

^PWD	Set the page flip password.
	Password level is required and must be 1 - 4.
	Syntax:
	`"'^PWD-<password level>,<page flip password>'"`
	Variables:
	`password level = 1 - 4.`
	page flip password = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'^PWD-1,Main'"`
	Sets the page flip password on Password Level 1 to 'Main'.

@RPP	Reset the protected password.
	@RPP resets the protected password to its default (1988).
	Syntax:
	`"'@RPP'"`
	Example:
	`SEND COMMAND Panel,"'@RPP'"`
	Resets the protected Setup page password to ‘1988’.

Dynamic Image Commands

The following table describes Dynamic Image Commands.

Dynamic Image Commands	

^BBR	Set the bitmap of a button to use a particular resource.
	Syntax:
	`"'^BBR-<vt addr range>,<button states range>,<resource name>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	resource name = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BBR-700,1,Sports_Image'"`
	Sets the resource name of the button to 'Sports_Image'.

^RAF	Adds any and all resource parameters by sending embedded codes and data.
	Since the embedded codes are preceded by a '%' character, any '%' character contained in the URL must be escaped with a second '%' character (see example).
	The file name field (indicated by a **%F** embedded code) may contain special escape sequences as shown in the *^RAF, ^RMF - Embedded Codes* table below.
	Syntax:
	`"'^RAF-<resource name>,<data>'"`
	Variables:
	• resource name = 1 - 50 ASCII characters.
	• data = Refers to the embedded codes, see the *^RAF, ^RMF - Embedded Codes* section on page 119.
	Example:
	`SEND_COMMAND Panel,"'^RAF-New Image,%P0%HAMX.COM%ALab/Test%%5Ffile%Ftest.jpg'"`
	Adds a new resource.
	• The resource name is 'New Image'
	• %P (protocol) is an HTTP
	• %H (host name) is ***AMX.COM***
	• %A (file path) is ***Lab/Test_file***
	• %F (file name) is ***test.jpg***.
	Note that the **%%5F** in the file path is actually encoded as **%5F**.

^RFR	Force a refresh for a given resource.
	Syntax:
	`"'^RFR-<resource name>'"`
	Variable:
	resource name = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^RFR-Sports_Image'"`
	Forces a refresh on 'Sports_Image'.

Dynamic Image Commands (Cont.)	

^RMF	Modify an existing resource.
	This command modifies any and all resource parameters by sending embedded codes and data.
	Since the embedded codes are preceded by a '%' character, any '%' character contained in the URL must be escaped with a second '%' character (see example).
	The file name field (indicated by a **%F** embedded code) may contain special escape sequences as shown in the *^RAF, ^RMF - Embedded Codes* section on page 119.
	Syntax:
	`"'^RMF-<resource name>,<data>'"`
	Variables:
	• resource name = 1 - 50 ASCII characters
	• data = Refers to the embedded codes, see the *^RAF, ^RMF - Embedded Codes* section on page 119.
	Example:
	`SEND_COMMAND Panel,"'^RMF-Sports_Image,%ALab%%5FTest/Images%Ftest.jpg'"`
	Changes the resource 'Sports_Image' file name to 'test.jpg' and the path to 'Lab_Test/Images'.
	Note that the **%%5F** in the file path is actually encoded as **%5F**.

^RSR	Change the refresh rate for a given resource.
	Syntax:
	`"'^RSR-<resource name>,<refresh rate>'"`
	Variable:
	resource name = 1 - 50 ASCII characters.
	refresh rate = Measured in seconds.
	Example:
	`SEND_COMMAND Panel,"'^RSR-Sports_Image,5'"`
	Sets the refresh rate to 5 seconds for the given resource ('Sports_Image').

^RAF, ^RMF - Embedded Codes

The ^RAF and ^RMF commands add and modify any and all resource parameters by sending embedded codes and data:

```
"'^RAF-<resource name>,<data>'"
"'^RMF-<resource name>,<data>'"
```

The <data> variable uses the embedded codes described in the following table:

^RAF, ^RMF - Embedded Codes		
Parameter	Embedded Code	Description
protocol	'%P <0-1>'	Set protocol. HTTP (0) or FTP (1).
user	'%U <user>'	Set Username for authentication.
password	'%S <password>'	Set Password for authentication.
host	'%H <host>'	Set Host Name (fully qualified DNS or IP Address).
file	'%F <file>'	Full path to the location of the file or program that will return the resource. The path must be a valid HTTP URL minus the protocol and host. The only exception to this is the inclusion of special escape sequences and in the case of FTP protocol, regular expressions.
path	'%A <path>'	Set Directory path. The path must be a valid HTTP URL minus the protocol, host and filename. The only exception to this is the inclusion of special escape sequences and in the case of FTP protocol, regular expressions.

^RAF, ^RMF - Embedded Codes (Cont.)		
Parameter	Embedded Code	Description
refresh	'%R <refresh 1-65535>'	The number of seconds between refreshes in which the resource is downloaded again. Refreshing a resource causes the button displaying that resource to refresh also. The default value is 0 (only download the resource once).
newest	'%N <0-1>'	Set the newest file. A value of 1 means that only the most recent file matching the pattern is downloaded. The 'newest file' option only applies to FTP Dynamic Images, and only those that have pattern matching as part of their filename. Neither 'newest file' nor pattern matching apply to HTTP Dynamic Images. When set, the panel will first pull a list of files matching the given pattern from the specified FTP server and path. The timestamps of the items in the list will be compared, with the newest one being displayed on the panel. This is useful for source devices that place a uniquely named still image in a folder at constant intervals, allowing the panel always to display the most recent one.
preserve	'%V <0-1>'	Set the value of the preserve flag. Default is 0. Currently preserve has no function.

Escape Sequences

The ^RAF and ^RMF commands support the replacement of any special escape sequences in the filename (specified by the **%F** embedded code) with the corresponding data obtained from the system as outlined in the table below:

Escape Sequences	
Sequence	Panel Information
$DV	Device Number
$SY	System Number
$IP	IP Address
$HN	Host Name
$MC	Mac Address
$ID	Neuron ID (*Only supported on panels that use ICSNet; ignored on all other panels*)
$PX	X resolution of current panel mode/file
$PY	Y resolution of current panel mode/file
$ST	Current state
$AC	Address code
$AP	Address port
$CC	Channel code
$CP	Channel port
$LC	Level code
$LP	Level port
$BX	X Resolution of Current button
$BY	Y Resolution of Current button
$BN	Name of Button

For instance, **http://www.amx.com/img.asp?device=$DV**

would become

http://www.amx.com/img.asp?device=10001.

Intercom Commands

The following is a list of Intercom Commands:

Intercom Commands	

^MODEL?	Sets model name.
	If the panel supports intercom hardware it will respond with its model name as shown in the response below.
	Older hardware or newer hardware that has intercom support disabled with not respond to this command.
	Syntax:
	`SEND_COMMAND <DEV>,"'^MODEL?'"`
	Variables:
	None.
	Example:
	`SEND_COMMAND TP1,"'^MODEL?'"`
	Panel response string if intercom enabled:
	`^MODEL-MVP-8400i`

^ICM	Modifies an intercom call.
	The microphone and/or speaker are activated based on the initial mode value of the intercom start command and the audio data packet flow is started upon receipt of this command by the panel.
	***Note**: For backwards compatibility, both ^ICM-TALK and ^ICM-LISTEN are supported. However, the TALK and LISTEN subcommands are ignored.*
	Syntax:
	`SEND_COMMAND <DEV>,"`^ICM-TALK`"`
	Variables:
	None.
	Example:
	`SEND_COMMAND TP1,"`^ICM-TALK`"`

^ICS-	Intercom start.
	Starts a call to the specified IP address and ports, where initial mode is either 1 (talk) or 0 (listen) or 2 (both). If no mode is specified 0 (listen) is assumed.
	***Note**: No data packets will actually flow until the intercom modify command is sent to the panel.*
	Syntax:
	`SEND_COMMAND <DEV>,"'^ICS-<IP>,<TX UDP port>,<RX UDP port>,<initial mode>'"`
	Variables:
	IP = IP Address of panel to connect with on an Intercom call.
	TX UDP port = UDP port to transmit to.
	RX UDP port = UDP port to receive from.
	initial mode = 0 (listen) or 1 (talk) or 2 (hands free). 0 is the default.
	Examples:
	Example of setting up a hands free unicast call between two panels:
	`SEND_COMMAND TP1, "^ICS-192.168.0.3,9000,9002,2"`
	`SEND_COMMAND TP2, "^ICS-192.168.0.4,9002,9000,2"`
	Example of setting up a multicast call where the first panel is paging two other panels:
	`SEND_COMMAND TP1, "^ICS-239.252.1.1,9002,9000,1"`
	`SEND_COMMAND TP2, "^ICS-239.252.1.1,9002,9000,0"`
	`SEND_COMMAND TP3, "^ICS-239.252.1.1,9002,9000,0"`
	Example of setting up a baby monitor call where the first panel is listening to the microphone audio coming from the second panel:
	`SEND_COMMAND TP1, "^ICS-192.168.0.3,9000,9002,0"`
	`SEND_COMMAND TP2, "^ICS-192.168.0.4,9002,9000,1"`

Intercom Commands (Cont.)	

^ICE'	Intercom end - this command terminates an intercom call/connection.
	Syntax:
	`SEND_COMMAND <DEV>,"'^ICE'"`
	Variables:
	None.
	Example:
	`SEND_COMMAND TP1,"'^ICE'"`
	`SEND_COMMAND TP2,"'^ICE'"`
	Terminates an intercom call between two panels.

^ICM-TALK	See *^ICM* section on page 121.
	Syntax:
	`SEND_COMMAND <DEV>,"'^ICM-TALK'"`
	Variables:
	None.
	Example:
	`SEND_COMMAND TP1,"'^ICM-TALK'"`

^ICM-LISTEN	See *^ICM* section on page 121.
	Syntax:
	`SEND_COMMAND <DEV>,"'^ICM-LISTEN'"`
	Variables:
	None.
	Example:
	`SEND_COMMAND TP1,"'^ICM-LISTEN'"`

^ICM-MICLEVEL	Set the microphone level during an intercom call.
	Syntax:
	`SEND_COMMAND <DEV>, "^ICM-MICLEVEL"`
	Variables:
	MICLEVEL: Range = 0 - 100
	Example:
	`SEND_COMMAND TP1, "^ICM-MICLEVEL,40"`

^ICM-MUTEMIC	Set the state of the microphone on a panel to muted (1) or un muted (0).
	At the start of each call the microphone starts out un muted.
	Syntax:
	`SEND_COMMAND <DEV>, "^ICM-MUTEMIC"`
	Variables:
	None.
	Example:
	`SEND_COMMAND TP1, "^ICM-MUTEMIC,1"`

^ICM-SPEAKERLEVEL	Set the speaker level during an intercom call.
	Syntax:
	`SEND_COMMAND <DEV>, "^ICM-SPEAKERLEVEL,55"`
	Variables:
	Valid levels are from 0 to 100.
	Example:
	`SEND_COMMAND TP1, "^ICM-SPEAKERLEVEL,55"`

Panel IR Commands

These commands are used to transmit and receive IR signals from the panel.

Each panel has up to 4 transmit ports specifically defined as IR output ports:

- AMX 38K
- AMX 455K
- User 1
- User 2

The **^IRM** command allows the command itself to specify the port number. IRM is needed because commands programmed on the panel itself can only be sent to a single port number.

The **^IRS** command is needed to enable the received AMX 38K or 455k. In some cases, both of these ports cannot be enabled at the same time.

Panel IR Commands	

^IRM	Pulses the given channel IR on for onTime in tenths of seconds.
	Delays offTime tenths of seconds before the next IR pulse is allowed.
	The port for the IR is specified in the command.
	Syntax:
	`SEND_COMMAND <DEV>,"'^IRM-<port>,<channel>,<onTime>,<offTime>'"`
	Variables:
	None.
	Example:
	`SEND_COMMAND TP1,"'^IRM-<port>,<channel>,<onTime>,<offTime>'"`
	`SEND_COMMAND TP2,"'^IRM-<port>,<channel>,<onTime>,<offTime>'"`
	Specifies the port number to be used.

^IRS	Enable the received AMX 38K or 455K The RX Ir port is specified in the command. Syntax: `SEND_COMMAND <DEV>,"'^IRS-<port>'"` Variables: None. Example: `SEND_COMMAND <DEV>,"'^IRS-<port>'"`

SIP Commands

The following table lists and describes SIP commands that are generated from the touch panel.

SIP Commands	

^PHN-AUTOANSWER	Provides the state of the auto-answer feature.
	Syntax:
	`"'^PHN-AUTOANSWER, <state>'"`
	Variable:
	state = 0 or 1 (off or on)
	Example:
	`SEND_COMMAND Panel,"'^PHN-AUTOANSWER, 1'"`

^PHN-CALL	Provides call progress notification for a call.
	Syntax:
	`"'^PHN-CALL, <status>, <connection id>'"`
	Variables:
	status = CONNECTED, DISCONNECTED, TRYING, RINGING, or HOLD.
	connection id = The identifying number of the connection.
	Example:
	`SEND_COMMAND Panel"'^PHN-CALL, CONNECTED, 1'"`
	Notifies that the call is connected.

^PHN-DECLINE	Decline (send to voice mail if configured) the incoming call on <CallID> as indicated from the previous PHN-INCOMING message. CallID should be 0 or 1. Syntax: `"'^PHN-DECLINE, <CallID>'"` Variable: CallID = The identifying number of the connection. Example: SEND_COMMAND Panel,'"^PHN-DECLINE,0""

^PHN-INCOMING	Provides incoming call notification and the connection id used for all future commands related to this call.
	The connection id will be 0 or 1.
	Syntax:
	`"'^PHN-INCOMING, <caller number>, <caller name>, <connection id>, <timestamp>, '"`
	Variables:
	caller number = The phone number of the incoming call.
	caller name = The name associated with the caller number.
	connection id = The identifying number of the connection.
	timestamp = The current time in MM/DD/YY HH:MM:SS format.
	Example:
	`SEND_COMMAND Panel,"'^PHN-INCOMING, 2125551000, AMX, 07/22/08 12:00:00, 1'"`

SIP Commands (Cont.)	

^PHN-LINESTATE	Indicates the current state of each of the available connections used to manage calls.
	Syntax:
	`"'^PHN-LINESTATE, <connection id>, <state>, <connection id>, <state>,...'"`
	Variables:
	connection id = The identifying number of the connection.
	state = IDLE, HOLD, or CONNECTED
	extn = The local extension of this panel (see Example)
	Example:
	`SEND_COMMAND Panel,"'^PHN-LINESTATE, 1, IDLE, 2, CONNECTED, SIP, <extn>'"`

^PHN-MSGWAITING	Indicates the number of messages waiting the user's voice mail box.
	Syntax:
	`"'^PHN-MSGWAITING, <messages>, <new message count>, <old message count>, <new urgent message count>, <old urgent message count>'"`
	Variables:
	messages = 0 or 1 (1 indicates new messages)
	new message count = The number of new messages.
	old message count = The number of old messages.
	new urgent message count = The number of new messages marked urgent.
	old urgent message count = The number of old messages marked urgent.
	Example:
	`SEND_COMMAND Panel,"'^PHN-MSGWAITING, 1, 1, 2, 1, 0'"`

^PHN-PRIVACY	Indicates the state of the privacy feature.
	Syntax:
	`"'^PHN-PRIVACY, <state>'"`
	Variable:
	state = 0 (Disable) or 1 (Enable)
	new message count = The number of new messages.
	old message count = The number of old messages.
	new urgent message count = The number of new messages marked urgent.
	old urgent message count = The number of old messages marked urgent.
	Example:
	`SEND_COMMAND Panel,"'^PHN-PRIVACY, 0'"`

^PHN-REDIAL	Indicates the panel is redialing the number.
	Syntax:
	`"'^PHN-REDIAL, <number>'"`
	Variable:
	number = The phone number to dial.
	Example:
	`SEND_COMMAND Panel,"'^PHN-REDIAL, 2125551000'"`

^PHN-TRANSFERRED	Indicates a call has been transferred.
	Syntax:
	`"'^PHN-TRANSFERRED'"`
	Example:
	`SEND_COMMAND Panel,"'^PHN-TRANSFERRED'"`

The following table lists and describes SIP commands that are sent to the touch panel to manage calls.

SIP Commands	

^PHN-ANSWER	Answers the call.
	Syntax:
	`"'^PHN-ANSWER, <connection id>'"`
	Variable:
	connection id = The identifying number of the connection
	Example:
	`SEND_COMMAND Panel,"'^PHN-ANSWER, 1'"`

^PHN-AUTOANSWER	Enables (1) or disables (0) the auto-answer feature on the phone.
	Syntax:
	`"'^PHN-AUTOANSWER, <state>'"`
	Variable:
	state = 0 (Disable) or 1 (Enable)
	Example:
	`SEND_COMMAND Panel,"'^PHN-AUTOANSWER, 1'"`
	Enables the auto-answer feature.

?PHN-AUTOANSWER	Queries the state of the auto-answer feature.
	The panel responds with the ^PHN-AUTOANSWER, <state> message.
	Syntax:
	`"'?PHN-AUTOANSWER'"`
	Example:
	`SEND_COMMAND Panel,"'?PHN-AUTOANSWER'"`

^PHN-CALL	Calls the provided number.
	Syntax:
	`"'^PHN-CALL, <number>'"`
	Variable:
	number = The provided phone number
	Example:
	`SEND_COMMAND Panel,"'^PHN-CALL, 2125551000'"`

^PHN-DTMF	Sends DTMF codes.
	Syntax:
	`"'^PHN-DTMF, <DTMF code>'"`
	Variable:
	DTMF code = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, POUND, or ASTERISK.
	Example:
	`SEND_COMMAND Panel,"'^PHN-DTMF, 1234567879ASTERISK'"`

^PHN-HANGUP	Hangs up the call.
	Syntax:
	`"'^PHN-HANGUP, <connection id>'"`
	Variable:
	connection id = The identifying number of the connection
	Example:
	`SEND_COMMAND Panel,"'^PHN-HANGUP, 1'"`

^PHN-HOLD	Places the call on hold.
	Syntax:
	`"'^PHN-HOLD, <connection id>'"`
	Variable:
	connection id = The identifying number of the connection
	Example:
	`SEND_COMMAND Panel,"'^PHN-HOLD, 1'"`

SIP Commands (Cont.)	

?PHN-LINESTATE	Queries the state of each of the connections used by the SIP device.
	The panel responds with the ^PHN-LINESTATE message.
	Syntax:
	`"'?PHN-LINESTATE'"`
	Example:
	`SEND_COMMAND Panel,"'?PHN-LINESTATE'"`

^PHN-PRIVACY	Enables or disables the privacy feature on the phone (do not disturb).
	Syntax:
	`"'^PHN-PRIVACY, <state>'"`
	Variable:
	state = 0 (Disable) or 1 (Enable)
	Example:
	`SEND_COMMAND Panel,"'^PHN-PRIVACY, 1'"`
	Enables the privacy feature.

?PHN-PRIVACY	Queries the state of the privacy feature.
	The panel responds with the ^PHN-PRIVACY, <state> message.
	Syntax:
	`"'?PHN-PRIVACY'"`
	Example:
	`SEND_COMMAND Panel,"'?PHN-PRIVACY'"`

^PHN-REDIAL	Redials the last number.
	Syntax:
	`"'^PHN-REDIAL'"`
	Example:
	`SEND_COMMAND Panel,"'^PHN-REDIAL'"`

^PHN-TRANSFER	Transfers the call to the provided number.
	Syntax:
	`"'^PHN-TRANSFER, <connection id>, <number>'"`
	Variable:
	connection id = The identifying number of the connection
	number = The number to which you want to transfer the call.
	Example:
	`SEND_COMMAND Panel,"'^PHN-TRANSFER, 1, 2125551000'"`

The following table lists and describes SIP setup commands. Using any of these commands causes the current user to go offline:

SIP Setup Commands	

^PHN-SETUP-DOMAIN	Sets the realm for authentication.
	Syntax:
	`"'^PHN-SETUP-DOMAIN,<domain>'"`
	Variable:
	domain = The realm used for authentication
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-DOMAIN,asterisk'"`

^PHN-SETUP-ENABLE	Registers a new user Once the configuration has been updated, the ENABLE command should be run to re-register the new user. Syntax: `"'^PHN-SETUP-ENABLE'"`

SIP Commands (Cont.)	

^PHN-SETUP-PASSWORD	Sets the user password for the proxy server.
	Syntax:
	`"'^PHN-SETUP-PASSWORD,<password>'"`
	Variable:
	password = The password for the user name
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-PASSWORD,6003'"`

^PHN-SETUP-PORT	Sets the port number for the proxy server.
	Syntax:
	`"'^PHN-SETUP-PORT,<port>'"`
	Variable:
	port = The port for the proxy server
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-PORT,5060'"`

^PHN-SETUP-PROXYADDR	Sets the IP address for the proxy server.
	Syntax:
	`"'^PHN-SETUP-PROXYADDR,<IP>'"`
	Variable:
	IP = The IP address for the proxy server
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-PROXYADDR,192.168.223.111'"`

^PHN-SETUP-STUNADDR	Sets the IP address for the STUN server.
	Syntax:
	`"'^PHN-SETUP-STUNADDR,<IP>'"`
	Variable:
	IP = The IP address for the STUN server
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-STUNADDR,192.168.223.111'"`

^PHN-SETUP-USERNAME	Sets the user name for authentication with the proxy server.
	Syntax:
	`"'^PHN-SETUP-USERNAME,<username>'"`
	Variable:
	username = The user name (usually the phone extension)
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-USERNAME,6003'"`

Troubleshooting

Overview

This section describes the solutions to possible hardware/firmware issues that could arise during the common operation of a Modero touch panel.

Troubleshooting Information	
Symptom	Solution
My USB drivers has a yellow exclamation point and doesn't appear to be working.	The USB driver was incorrectly installed and should be re-installed: • Power up the panel without the USB cable connected to the panel. • Plug in the USB cable into the G4 panel. You should see a USB icon show up in the System Tray. • Double click on the icon to bring up the list of USB devices (you should see the "AMX USB LAN LINK" device in the list). • If the "Install Driver" dialog doesn't appear automatically, select the "Properties" button and then the "Update Driver" button. • When the Install Driver dialog does appear, click Next to accept all the default prompts. • The OS will state that the driver you are installing/updating does not have a digital signature. This is acceptable, so agree to continue the installation. • After installation is complete, the exclamation point should disappear.
When using G4 WebControl to communicate with a target panel, a VNC Server dialog appears on my screen.	• During a WebControl connection to a target panel, a G4 Authentication dialog will ask you to enter the assigned password for the panel before allowing access. • If prompted with a *VNC Server* dialog, enter the IP Address of the target panel. This can be found within the **Setup > Protected Setup > System Connection** page. This IP Address of the panel appears within the *IP Settings* section of this page • Enter the IP Address and click **OK**. When prompted with the G4 Authentication popup, enter the panel's WebControl password.
While attempting to communicate directly with the Virtual Master (on the PC) via a USB connection, I can't get my communication icon to turn Green.	• A Green communication icon indicates that a connection has been established to the target Master or target Virtual Master. • Launch NetLinx Studio and configure the Master Connection communication settings for a Virtual Master. • Navigate to the System connection page and toggle the *Type* field to **USB**. • Make sure the Type-A USB connector is securely connected to the PC. • Make sure the panel DOES NOT have the mini-USB connected and then TURN OFF the panel. • Once the panel has turned ON, THEN connect the mini-USB to the Program Port. The USB icon should appear in the system tray. If it doesn't, refer to the *Configuring and Using USB with a Virtual Master* section on page 25. • The panel may need a few minutes to detect the connection to the PC.
My Modero panel isn't appearing in my Workspace window.	• Verify that the System number is the same on both the NetLinx Workspace window and the System Connection page on the Modero panel. • Verify that you have entered the proper NetLinx Master IP and connection methods into the Master Connection section of the System Connection page.

Troubleshooting Information (Cont.)	
Symptom	Solution
My Modero panel can't obtain a DHCP Address	In requesting a DHCP Address, the DHCP Server can take up to a few minutes to provide the address. • Verify that an active Ethernet connection is attached to the rear of the Modero before beginning these procedures. • Select **Diagnostics** > **Network Address** from the *Main* menu and verify the System number. • If the IP Address field is still empty, give the Modero a few minutes to negotiate a DHCP Address and try again.
My panel is not showing up in the Virtual Master's System list of connected devices.	If a Virtual Master has already connected to the target panel, the G4 device retains the information of the previous Virtual Master System number. • Reboot the panel without plugging the USB cable into the panel. • Configure NetLinx Studio for a Virtual Master connection. Note the System Number used in the *Edit Settings* window. • Stop communication on the Virtual Master by going to **Settings** > **Stop Communications**. • Click **Yes** to stop communication. • Select the System Number (from the Online Tree tab) and use a right mouse click to select **Refresh System**. This re-establishes communication with the Virtual Master. • Plug-in the mini-USB cable into the corresponding port on the panel. • Wait a few seconds and refresh the system. This re-establishes communication with the Virtual Master. The panel should now appear in the list of available devices.
My Connection Status button isn't blinking and it says the USB is connecting.	"USB Connecting" is displayed when the panel tries to establish USB communication with the PC, either within the NetLinx Studio or TPDesign4 applications. • Remove the USB connector from the panel and close any AMX applications. • Reboot the panel. • Launch the AMX application and attempt reconnect to the panel. • If using Studio for Virtual Master communication, establish a Virtual Master connection, verify the correct System number, stop communication with the Virtual Master, and then re-establish communication by refreshing the system. • After the panel powers-up, reconnect the USB connector to the panel. • Verify that you have a valid USB connection from within your System Tray.
My on-screen mouse cursor doesn't appear.	• The USB connections are not detected until after the particular USB connection plugged into the corresponding port on the panel and power is cycled to the panel.
Calibration is not working.	• After the Modero touch panel has been updated with a new firmware kit (downloaded to the panel through NetLinx Studio), the calibration could need to be reset. • Cycling power to the panel should provide a baseline calibration for the particular touch panel. Proceed to the Calibration page and reset the on-screen calibration.
Panel doesn't respond to my touches	• The protective cover makes calibration difficult because the user can't calibrate on specific crosshairs when the sheet is pressing on the whole LCD. • Verify that the protective laminate coating on the LCD has been removed before beginning any calibration process.

Troubleshooting Information (Cont.)	
Symptom	Solution
The left border of the graphics has a crawling, dashed line.	• On some units at some resolutions, wavy lines may appear across the entire screen. This has been seen on middle resolutions and is referred to as the "Mid Range Fallout" problem. • This is due to the graphics controller settings in the firmware. • Update to the latest v2.XX.XX firmware. Visit the **www.amx.com** > T**ech Center** > **Downloadable Files** > **Firmware Files** > **Modero panels**, and then download the KIT file to your computer.
NetLinx Studio only detects one of my connected Masters.	Each Master is give a Device Address of 00000. • Only one Master can be assigned to a particular System number. When working with multiple Masters, open different instances of NetLinx Studio and assign each Master its own System value. • Example: a site has an NXC-ME260/64 and an NI-4000. In order to work with both units. The ME260/64 can be assigned System #1 and the NI-4000 can then be assigned System #2 using two open sessions of NetLinx Studio 2.
I can't seem to connect to a NetLinx Master using NetLinx Studio.	• From the **Settings** > **Master Comm Settings** > **Communication Settings** > **Settings (for TCP/IP)**, uncheck the "**Automatically Ping the Master Controller** to ensure availability" box. • The pinging is to determine if the Master is available, and to reply with a connection failure instantly if it is not. Without using the ping feature, you will still attempt to make a connection, but a failure will take longer to be recognized. Some firewalls and networks do not allow pinging, though, and the ping will then always result in a failure. • When connecting to a NetLinx Master controller via TCP/IP, the program will first try to ping the controller before attempting a connection. Pinging a device is relatively fast and will determine if the device is off-line, or if the TCP/IP address that was entered was incorrect. If you decide NOT to ping for availability and the controller is off-line, or you have an incorrect TCP/IP address, the program will try for 30-45 seconds to establish a connection. ***Note**: When trying to connect to a master controller that is behind a firewall, unchecking this option may be required. Most firewalls will not allow ping requests to pass through for security reasons.*
I have more that one Modero panel connected to my System Master and only one shows up.	Multiple NetLinx Compatible devices (such as Modero panels) can be associated for use with a single Master. Each Modero panel comes with a defaulted Device Number value of 10001. When using multiple panels, it can become very easy to overlook the need to assign different Device Number values to each panel. • Press and hold the grey Front Setup Access button for 3 seconds to open the Setup page. • Press the **Protected Setup** button (located on the lower-left of the panel page), enter ***1988*** into the on-screen Keypad's password field, and press **Done** when finished. • Enter a Device Number value for the panel into the Device Number Keypad. *The default is 10001 and the range is from 1 - 32000*.

Troubleshooting Information (Cont.)	
Symptom	Solution
After downloading a panel file or firmware to a G4 device, the panel behaves strangely.	Symptoms include: • Having to repeat the download. • Inability to make further downloads to the panel. May get "directory" errors, "graphics hierarchy" errors, etc.… indicating problems with the Flash memory. • Panel will not boot, or gets stuck on "AMX" splash screen. • Other problems also started after downloading to a new panel or a panel with a TPD4 file that takes up a considerable amount of the available Flash memory. Cause: • If the G4 device already contains a large enough file, subsequent downloads will take up more space than is available and could often corrupt the Flash memory. The demo file that typically ships with G4 panels is one such file. Solution: • DO NOT download TPD4 files (of large size) over the demo pages, or any other large TPD4 file. • First download a small blank one page file to the G4 panel using the Normal Transfer option to send/download the page. Reboot the device, then do your regular file or firmware download.

Appendix A - Text Formatting Codes

Text Formatting Codes for Bargraphs/Joysticks

Text formatting codes for bargraphs provide a mechanism to allow a portion of a bargraphs text to be provided dynamically generated information about the current status of the level (multistate and traditional). These codes would be entered into the text field along with any other text.

The following is a code list used for bargraphs:

Bargraph Text Code Inputs		
Code	Bargraph	Multi-State Bargraph
$P	Display the current percentage of the bargraph (derived from the Adjusted Level Value as it falls between the Range Values)	Display the current percentage of the bargraph (derived from the Adjusted Level Value as it falls between the Range Values)
$V	Raw Level Value	Raw Level Value
$L	Range Low Value	Range Low Value
$H	Range High Value	Range High Value
$S	N/A	Current State
$A	Adjusted Level Value (Range Low Value subtracted from the Raw Level Value)	Adjusted Level Value (Range Low Value subtracted from the Raw Level Value)
$R	Low Range subtracted from the High Range	Low Range subtracted from the High Range
$$	Dollar sign	Dollar sign

The codes on a button may be modified by changing the text on a button via a VT command. When one of the Text Formatting Codes is encountered by the firmware, it is replaced with the correct value. These values are derived from the following operations:

Formatting Code Operations	
Code	Operation
$P	(Current Value - Range Low Value / Range High Value - Range Low Value) x 100
$V	Current Level Value
$L	Range Low Value
$H	Range High Value
$S	Current State (if regular bargraph then resolves to nothing)
$A	Current Value - Range Low Value
$R	Range High Value - Range Low Value

Given a current raw level value of 532, a range low value of 500, and a high range value of 600, the following text formatting codes would yield the following strings as shown in the table below:

Example	
Format	Display
$P%	32%
$A out of $R	32 out of 100
$A of 0 - $R	32 of 0 - 100
$V of $L - $H	532 of 500 - 600

Text Area Input Masking

Text Area Input Masking can be used to limit the allowed/correct characters that are entered into a text area. For example, in working with a zip code, a user could limit the entry to a max length of only 5 characters but, with input masking, these could be limited to 5 mandatory numerical digits and 4 optional numerical digits. A possible use for this feature is to enter information into form fields. The purpose of this feature is to:

- Force the use of correct type of characters (i.e. numbers vs. characters)
- Limit the number of characters in a text area
- Suggest proper format with fixed characters
- Right to Left
- Required or Optional
- Change/Force a Case
- Create multiple logical fields
- Specify range of characters/number for each field

With this feature, it is NOT necessary to:

- Limit a choice of selections
- Handle complex input tasks such as names, days of the weeks or months by name
- Perform complex validation such as Subnet Mask validation

Input mask character types

These character types define what information is allowed to be entered in any specific instance.

The following table lists what characters in an input mask will define what characters are allowed in any given position.

Character Types	
Character	Masking Rule
0	Digit (0 to 9, entry required, plus [+] and minus [-] signs not allowed)
9	Digit or space (entry not required, plus and minus signs not allowed)
#	Digit or space (entry not required; plus and minus signs allowed)
L	Letter (A to Z, entry required)
?	Letter (A to Z, entry optional)
A	Letter or digit (entry required)
a	Letter or digit (entry optional)
&	Any character or a space (entry required)
C	Any character or a space (entry optional)

The number of the above characters used determines the length of the input masking box. Example: 0000 requires an entry, requires digits to be used, and allows only 4 characters to be entered/used.

Refer to the following Send Commands for more detailed information:

- `^BIM` - Sets the input mask for the specified addresses. (see the *^BIM* section on page 84).
- `^BMF` subcommand **`%MK`** - sets the input mask of a text area (see the *^BMF* section on page 86).

Input mask ranges

These ranges allow a user to specify the minimum and maximum numeric value for a field.

Only one range is allowed per field. Using a range implies a numeric entry ONLY.

Input Mask Ranges	
Character	Meaning
[	Start range
]	End range
|	Range Separator

An example from the above table:

[0|255] This allows a user to enter a value from 0 to 255.

Input mask next field characters

These characters specify a list of characters that cause the keyboard to move the focus to the next field when pressed, instead of inserting the text into the text area.

Input Mask Next Field Char	
Character	Meaning
{	Start Next Field List
}	End Next Field List

An example from the above table:

{.} or {:} or {.:} Tells the system to proceed to the next text area input box after a user hits any of these keys.

Input mask operations

Input Mask Operators change the behavior of the field in the following way:

Input Mask Operators	
Character	Meaning
<	Forces all characters to be converted to lowercase
>	Forces all characters to be converted to uppercase
^	Sets the overflow flag for this field

Input mask literals

To define a literal character, enter any character, other than those shown in the above table *(including spaces, and symbols)*. A back-slash ('\') causes the character that follows it to be displayed as the literal character. For example, **\A** is displayed just as the letter **A**.

To define one of the following characters as a literal character, precede that character with a back-slash. Text entry operation using Input Masks.

A keyboard entry using normal text entry is straightforward. However, once an input mask is applied, the behavior of the keyboard needs to change to accommodate the input mask's requirement. When working with masks, any literal characters in the mask will be "skipped" by any cursor movement, including cursor keys, backspace, and delete.

When operating with a mask, the mask should be displayed with placeholders. The "-" character should display where to enter a character. The arrow keys will move between the "-" characters and allow them to be replaced. The text entry code operates as if it is in the overwrite mode. If the cursor is positioned on a character already entered and you type in a new (and valid) character, the new character replace the old character. Characters are not shifted.

When working with ranges specified by the [] mask, the keyboard allows entry of a number between the values listed in the ranges. If a user enters a value that is larger than the maximum, the maximum number of right-most characters is used to create a new, acceptable value.

- **Example 1**: If typing "125" into a field accepting 0-100, then the values displayed will be "1", "12", "25".
- **Example 2**: If the max for the field was 20, then the values displayed will be "1", "12", "5".

When data overflows from a numerical field, the overflow value is added to the previous field on the chain **if** the overflow character was specified. In the above example, if the overflow flag was set, the first example will place the "1" into the previous logical field and the second example will place "12" in the previous logical field.

If the overflow field already contains a value, the new value will be inserted to the right of the current characters and the overflow field will be evaluated. Overflow continues to work until a field with no overflow value is set or no more fields remain (i.e. reached first field).

If a character is typed and that characters appear in the Next Field list, the keyboard should move the focus to the next field. For example, when entering time, a **":"** is used as a next field character. When entering "1:2", the 1 is entered in the current field (hours) and then the focus is moved to the next field and 2 is entered in that field.

When entering time in a 12-hour format, entry of AM and PM is required. Instead of adding AM/PM to the input mask specification, the AM/PM should be handled within the NetLinx code. This allows a programmer to show/hide and provide discrete feedback for AM and PM.

Input mask output examples

The following are some common input masking examples:

Output Examples		
Common Name	Input Mask	Input
IP Address Quad	[0|255]{.}	Any value from 0 to 255
Hour	[1|12]{:}	Any value from 1 to 12
Minute/Second	[0|59]{:}	Any value from 0 to 59
Frames	[0|29]{:}	Any value from 0 to 29
Phone Numbers	(999) 000-0000	(555) 555-5555
Zip Code	00000-9999	75082-4567

URL Resources

A URL can be broken into several parts. For example, the URL *http://www.amx.com/company-info-home.asp* indicates that the protocol in use is **http** (HyperText Transport Protocol) and that the information resides on a host machine named **www.amx.com**. The image on that host machine is given an assignment name by the program of **company-info-home.asp** *(Active Server Page)*.

The exact meaning of this name on the host machine is both protocol dependent and host dependent. The information normally resides in a file, but it could be generated dynamically. This component of the URL is called the file component, even though the information is not necessarily in a file.

A URL can optionally specify a port, which is the port number to which the TCP connection is made on the remote host machine. If the port is not specified, the default port for the protocol is used instead. For example, the default port for http is 80. An alternative port could be specified as: http://www.amx.com:8080/company-info-home.asp.

Any legal HTTP syntax can be used.

Special escape sequences

The system has only a limited knowledge of URL formats in that it transparently passes the URL information onto the server for translation. A user can then pass any parameters to server side programs such as CGI scripts or active server pages. However, the system will parse the URL looking for special escape codes. When it finds an escape code, it replaces that code with a particular piece of panel, button, or state information.
For example, "http://www.amx.com/img.asp?device=$DV" would become "http://www.amx.com/img.asp?device=10001". Other used escape sequences include:

Escape Sequences

Sequence	Panel Information
$DV	Device Number
$SY	System Number
$IP	IP Address
$HN	Host Name
$MC	Mac Address
$ID	Neuron ID
$PX	X Resolution of current panel mode/file
$PY	Y Resolution of current panel mode/file
$BX	X Resolution of current button
$BY	Y Resolution of current button
$BN	Name of button
$ST	Current state
$AC	Address Code
$AP	Address Port
$CC	Channel Code
$CP	Channel Port
$LC	Level Code
$LP	Level Port

Appendix B - Complex Script Support

Overview

In many cases, a user needs a touch panel user interface that utilizes a font applicable to the area for which its use is intended, and to accomplish this without needing to resort to images of properly formed text. This includes proper rendering of right-to-left languages such as, but not limited to, Arabic, Hebrew, Thai and Devangari (FIG. 63).

Both the NXD-500i and TPDesign4 (v3.1 or higher) support complex script languages, to the extent that the True Type font currently selected for that state supports the language in question.

TPDesign4 allows the user to type the desired text into a project, view it in G4Panel Preview, and download it to the panel.

NOTE

Most languages can be entered into the state property field in TPDesign4 via the Windows language bar.

FIG. 63 Warning page in Arabic

In some cases, the user may need correct rendering of mixed left-to-right and right-to-left text, and may display both of these together in the same page (FIG. 64). Text edit boxes only operate left-to-right.

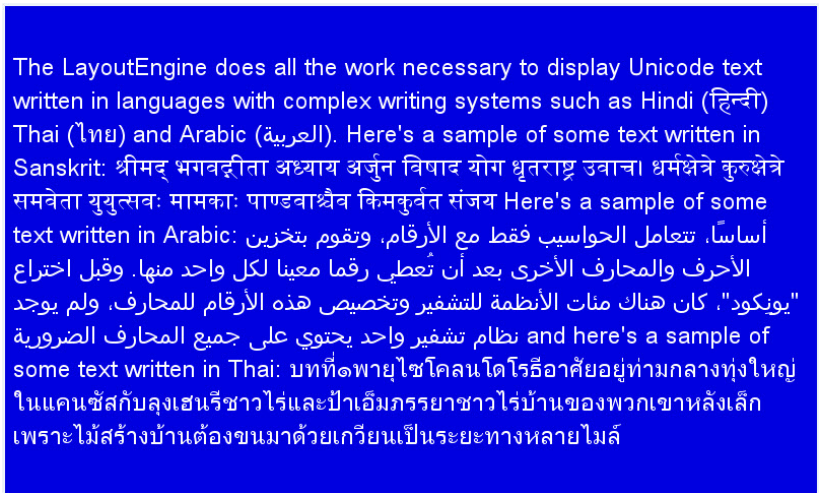
The LayoutEngine does all the work necessary to display Unicode text written in languages with complex writing systems such as Hindi (हिन्दी) Thai (ไทย) and Arabic (العربية). Here's a sample of some text written in Sanskrit: श्रीमद् भगवद्गीता अध्याय अर्जुन विषाद योग धृतराष्ट्र उवाच। धर्मक्षेत्रे कुरुक्षेत्रे समवेता युयुत्सवः मामकाः पाण्डवाश्चैव किमकुर्वत संजय Here's a sample of some text written in Arabic: تتعامل الحواسيب فقط مع الأرقام، وتقوم بتخزين أساسًا. الأحرف والمحارف الأخرى بعد أن تُعطي رقما معينا لكل واحد منها. وقبل اختراع "يونيكود"، كان هناك مئات الأنظمة للتشفير وتخصيص هذه الأرقام للمحارف، ولم يوجد نظام تشفير واحد يحتوي على جميع المحارف الضرورية and here's a sample of some text written in Thai: บทที่๑พายุไซโคลนโดโรธีอาศัยอยู่ท่ามกลางทุ่งใหญ่ ในแคนซัสกับลุงเฮนรีชาวไร่และป้าเอ็มภรรยาชาวไร่บ้านของพวกเขาหลังเล็ก เพราะไม้สร้างบ้านต้องขนมาด้วยเกวียนเป็นระยะทางหลายไมล์

FIG. 64 Mixed left-to-right and right-to-left text

Some languages, notably Hindi and Tamil, are not supported by coded pages. These languages will display "*???*" for characters entered via the language bar, even if the selected font supports the language.

Text in these languages can still be pasted via the clipboard or via the *Alt-<Scan Code>* method.

For more information on TPDesign4 and its complex script support, please refer to the TPDesign4 (v3.0 or higher) Operation Reference Guide*, available at* ***www.amx.com****.*

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